AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

SEPTEMBER 1953 • THIRTY-FIVE CENTS

ANNIVERSARY ISSUE

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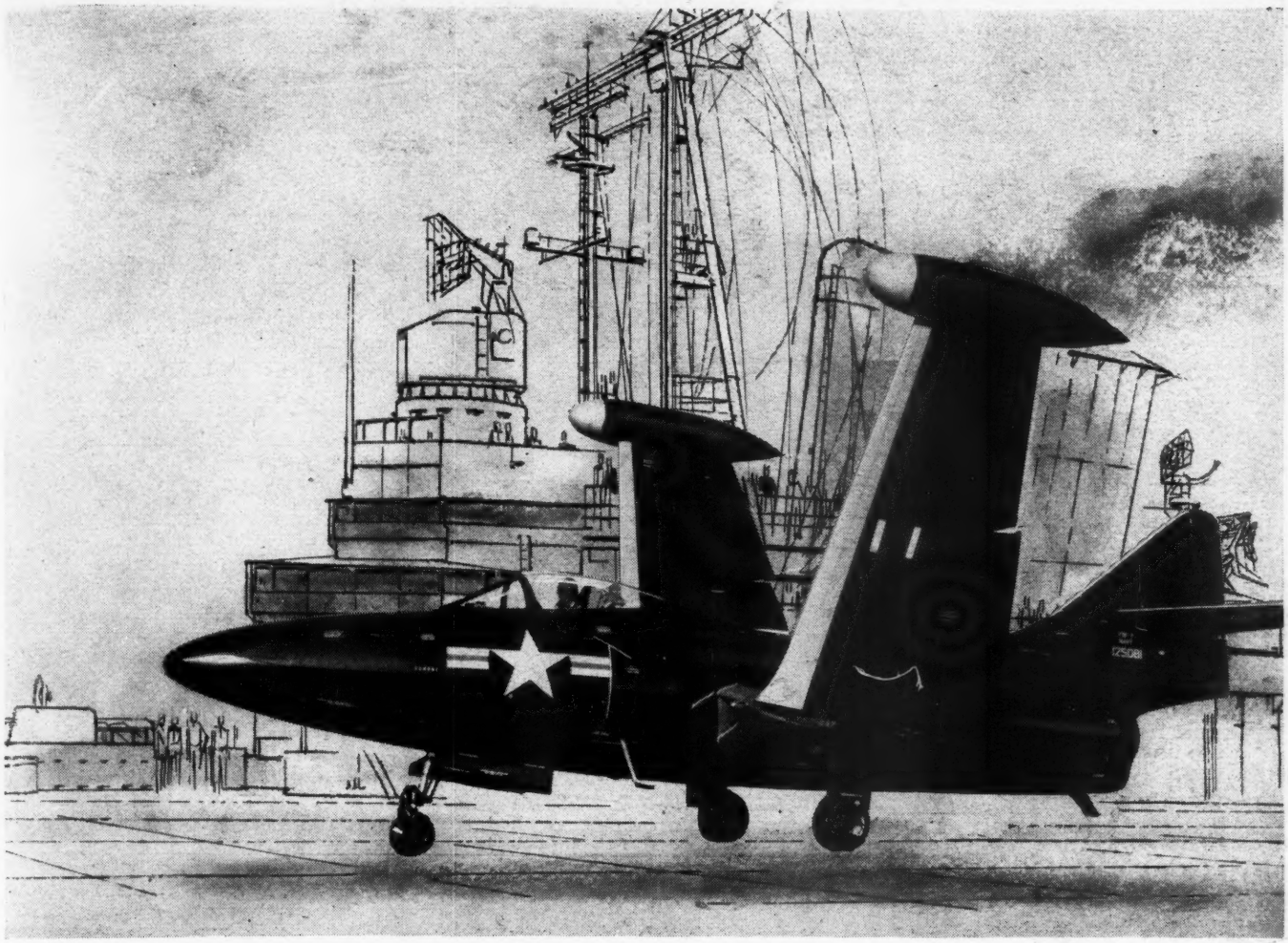
Now! Arma puts the plane on the map...

Arma's new Pictorial Computer shows a pilot his exact location and heading, continuously on a projected map—throughout a given flight. Here's how it works:

A film strip containing as many as 700 maps shows the various OBD stations over which the aircraft will pass. During flight, the Arma Computer automatically indicates position and heading of the plane on a TV-like screen. In other words, the Computer shows continuously and exactly where the plane is in respect to the ground, at every moment of flight—regardless of weather, altitude or speed. It automatically tunes to the appropriate OBD frequency, automatically adjusts for scale of map and has provisions for automatic chart changing.

Arma has worked closely with the Air Navigation Development Board and the Civil Aeronautics Administration in developing this Pictorial Computer for use in proposed advanced systems of air navigation and traffic control. For 35 years Arma has worked hand in hand with the Army, Navy and Air Force—and more recently with the Atomic Energy Commission—in developing important military control systems. *Arma Corporation, Brooklyn, N. Y.; Garden City, N. Y. Subsidiary of American Bosch Corporation.*

ARMA ADVANCED ELECTRONICS FOR CONTROL



WE TRAVEL IN FAST COMPANY

ADD the famous Grumman F9F series of shipboard fighters to the impressive list of fast-flying planes which rely on Goodyear for landing safety and fuel stowage.

Every single Panther Jet is equipped 100% with wheels and famed single disc brakes supplied by Goodyear's Aviation Products Division; the tires and tubes on its landing wheels are 100% Goodyear; and Goodyear also supplies both bullet-sealing and bladder-type fuel cells for this powerful Navy and Marine fighter.

And so it is, time after time: designers of the world's fastest aircraft specify Goodyear Aviation Products — because Goodyear represents proved performance.

For it was Goodyear who designed and engineered the single disc aircraft brake, who pioneered the first successful bullet-sealing fuel tank.

Such experience makes Goodyear the first and logical choice. Such performance will keep Goodyear Aviation Products first in their field.

Goodyear has been contributing to aviation progress since 1909. Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, Calif.

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MORE AIRCRAFT LAND ON GOODYEAR TIRES, TUBES, WHEELS AND BRAKES THAN ON ANY OTHER KIND

LIFE SAVER—Only a few minutes after bailing out of his crippled jet fighter, this Air Force pilot was rescued from the Yellow Sea off Korea by a Sikorsky H-19 helicopter. Such "Guardian Angels" hover just out of enemy range, ready to answer emergency calls. The rescue technique shown is responsible for saving hundreds of U. N. pilots.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

PRISONER EXCHANGE—During the exchange of sick and wounded war prisoners in Korea, Sikorsky H-19 helicopters of the Army's 6th Transportation Helicopter Company flew a steady shuttle between the exchange point near Munsan and hospitals in Seoul. Six patients were carried on each flight during the week-long operation.

INTERNATIONAL SERVICE—Sabena Belgian Airlines in August opened the first scheduled international helicopter passenger service, supplementing its regular airline service to all of Europe, the Near East and Africa. Using big Sikorsky S-55s, helicopter flights will serve cities in Belgium, Holland, France, Germany and Luxemburg.

FAST SERVICE—With Sikorsky S-55 helicopters, the first regularly scheduled U. S. helicopter passenger service has been opened by New York Airways. In July, regular passenger flights began between LaGuardia, New York International, and Newark Airports in the New York City area. Only minutes are needed for inter-airport trips, which once took hours by surface vehicle.

SIKORSKY AIRCRAFT

BRIDGEPORT, CONNECTICUT

One of the Four Divisions of United Aircraft Corporation

American progress in aviation has been respected for a half-century

Since that December day in Kitty Hawk, in 1903, the consistent month after month progress of the American Aviation Industry has commanded the respect of all nations.

This half-century of continuous progress has been brought about by research and development . . . millions of man hours with perfection the goal.

Complete Rheem facilities, from research through production, are at the disposal of the aviation industry. Write for information.

RHEEM Manufacturing Company . . . Aircraft Division, Downey, California

AIR MAIL

Career Pilots

Gentlemen: Modern transport airplanes are very complicated things. No air carrier would think of putting a captain on a DC-6 or a Boeing that hadn't had thousands of hours or fifteen or more years of experience. These fellows are invariably over forty.

The C-124 and other large aircraft being operated by MATS and Troop Carrier are super-complicated, nor do they have as much built-in safety. Until the Air Force adopts a policy of making career pilots out of the promising youngsters and letting them achieve the rank of full colonel as pilots—*professional* pilots—we are going to continue to kill huge planeloads of military personnel. It is simply not in the cards for a fellow without the years and the experience to have the mature judgment necessary to meet emergencies in big airplanes; nor is it possible for a guy to fly an airplane one year and a desk the next year and achieve or maintain anything like the requisite proficiency.

L. C. Burwell, Jr., Vice-Pres.
The Flying Tiger Line Inc.
Washington, D. C.

To the Fire Wall

Gentlemen: In renewing my charter membership in AFA, I've got to sound off to someone . . .

Twice in my life I've met men of cabinet rank. The first was Newton D. Baker, with whom I talked at length shortly before his death. The second was Charles Erwin Wilson, now Secretary of Defense, whom I met at a Carnegie Tech Homecoming, both of us being alumni of that grand young school.

Now, demmit, after my gloating inwardly about the honor of having talked several times with Mr. Wilson . . . after my having held fast for him when he was under criticism for his stock ownership . . . after my having (even though a hereditary Democrat) told all and sundry he was one man across whose eyes no wool could be pulled . . .

Now, I've got to read of his insistence that we can have the best Air Force in the world at a price tag less than the well-grounded General Vandenberg has placed on a second best.

Push it to the fire wall, AFA! I'd sooner pay more taxes (and I hate taxes) than knuckle down to the aggressors, who seem always to be with us. Keep up the fight for 143 wings. That's why I'm proud to belong – because you're working for me and the kids and the grandchildren.

Don Allshouse
Erie, Pa.

A Good Point

Gentlemen: I read Mrs. Schenk's interesting article, "Should My Husband Quit the Air Force," when the May issue of AIR FORCE first appeared. There has been quite a bit of comment on it since that time. Although I enjoyed reading it and appreciate the arguments she presents in behalf of service life, I was struck by the glaring omission of one potent argument.

Mrs. Schenk did not consider, at least in her article, the type of work in which her husband is engaged and whether or not he is really interested in it, is happy in that Air Force specialty or specialties, and can see a definite future in same. Surely, is not this a prime consideration in choosing any career?

Capt. Edwin A. Gere, Jr., USAFR
State College, Pa.

July Cover

Gentlemen: Your July issue reached me yesterday and the cover was certainly a great disappointment. As you say, it has a significance, even though it was perhaps incomplete in presenting the whole story.

Somehow it seems that there should have been another tombstone immediately alongside the first. Incised thereon the following appropriate words might have completed the entire thought:

K-F Contract
C-119s at five times the
current market cost

I feel certain that you are well enough informed to know that for every result there is a direct cause. Perhaps a little more discretion is in order for future expenditures.

The general public would have a difficult time reconciling your cover after reading articles like "Bogged Down Boxcars" in the June 15, 1953, issue of "Time."

Alfred R. Lea
Bellaire, Tex.

Gentlemen: As an Air Force wife since the days when we were a small section of the Signal Corps, I want to register my protest against your July cover picture. Regardless of the merits of the 143-wing controversy, anything so needlessly offensive only serves to justify anti-Air Force critics, and is certainly no way to win friends, influence Congress, or retain self-respect.

I also feel sure that many other mothers of sons "missing in action" will deeply resent such a travesty of good taste.

Frances Quincy Ervin
Manchester, Mass.

Gentlemen: It is unfortunate that the Air Force budget picture warrants such a cover as the one displayed on the July issue of AIR FORCE magazine.

There is about as much satisfaction in complimenting you on that cover as there is in telling an undertaker, "My, you certainly made him look natural." The economy-minded budget cutters should receive the "shroud and shovel" award for their diligence in burying the Air Force. Perhaps, they may even be in line for an oak leaf cluster, for every plane not produced due to budget cuts has been knocked from our air defense line-up just as surely as though it had been blasted from the skies by one of Russia's MIGs. What scales can you use to achieve a balance between budget dollars saved and American lives lost?

The final *coup-de-grâce* of this short-sighted attitude toward the USAF was the deliberate slap in the face given to

(Continued on following page)

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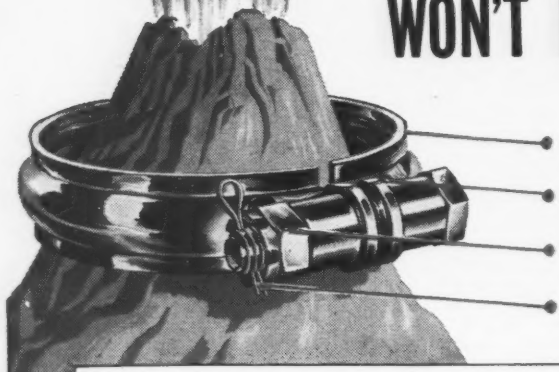
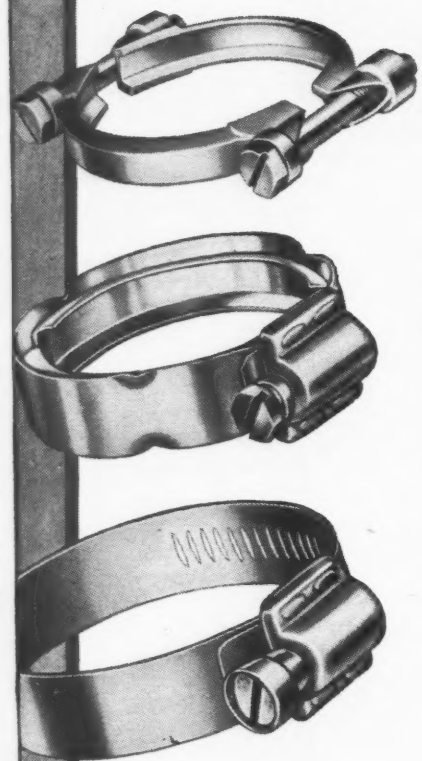
HOT UNDER THE COLLAR . . .

But This Special Purpose BREEZE Clamp WON'T BLOW its TOP!


Heavy corrugated band for extra strength.
Heavy stainless steel welded lugs.
Hex nut for high torque tightening.
Bolt safety-fastened—can't get loose.



A jet engine exhaust is a volcano of heat, pressure and vibration. The clamp that goes around it must withstand these conditions—and *hold tight.*

Breeze makes a clamp for this exacting use, and for a wide variety of other applications where stock items just won't do.

Just as Breeze AERO-SEAL hose clamps have set higher quality standards in their class, so Breeze fabricated-to-order clamps have the extra strength and other properties for every special use. Any design, any metal, any quantity. Tell us your clamping problems.

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AIR MAIL——CONTINUED

"Mr. Air Force" upon his retirement. This stinging blow was the failure of the Pentagon and Defense Department brass (with the exception of Secretary of the Air Force Harold Talbott) to appear at the ceremonies honoring Gen. Hoyt Vandenberg during his last day as Chief of Staff of the Air Force. We are embarrassed because of the lack of decency on the part of some of our elected and appointed government officials who let the budget dollar influence them to the extent that they fail to pay tribute to this fine, courageous man. Hoyt Vandenberg may well go down in history as another Billy Mitchell.

Larry G. Hastings
Past Commander, Ohio Wing, AFA
Toledo, Ohio

Correction Department

Gentlemen: Referring to your excellent and very timely staff study, "The Truth About our Air Defense" (May 1953), I suggest that by "increasing credulous reports" your writer perhaps meant "increasingly credible reports." People are credulous (or incredulous), whereas events or accounts of them are credible (or incredible).

Carelessness in the use of words inevitably, and sometimes undeservedly, suggests carelessness in the gathering and selection of factual material, thereby reducing the effectiveness of an article.

George A. Chandler
San Anselmo, Calif.

Gentlemen: May I call your attention to a rather serious inaccuracy in "Mobilization News" on page 59, July issue. The Air Force has certainly not "jettisoned its new program for accepting students for advanced ROTC on *priority basis* . . . Program had given top priority to those desiring flight training."

The information contained in your original item on AF-ROTC ("Airpower in the News," June 1953 issue) is still correct. That program has not been jettisoned.

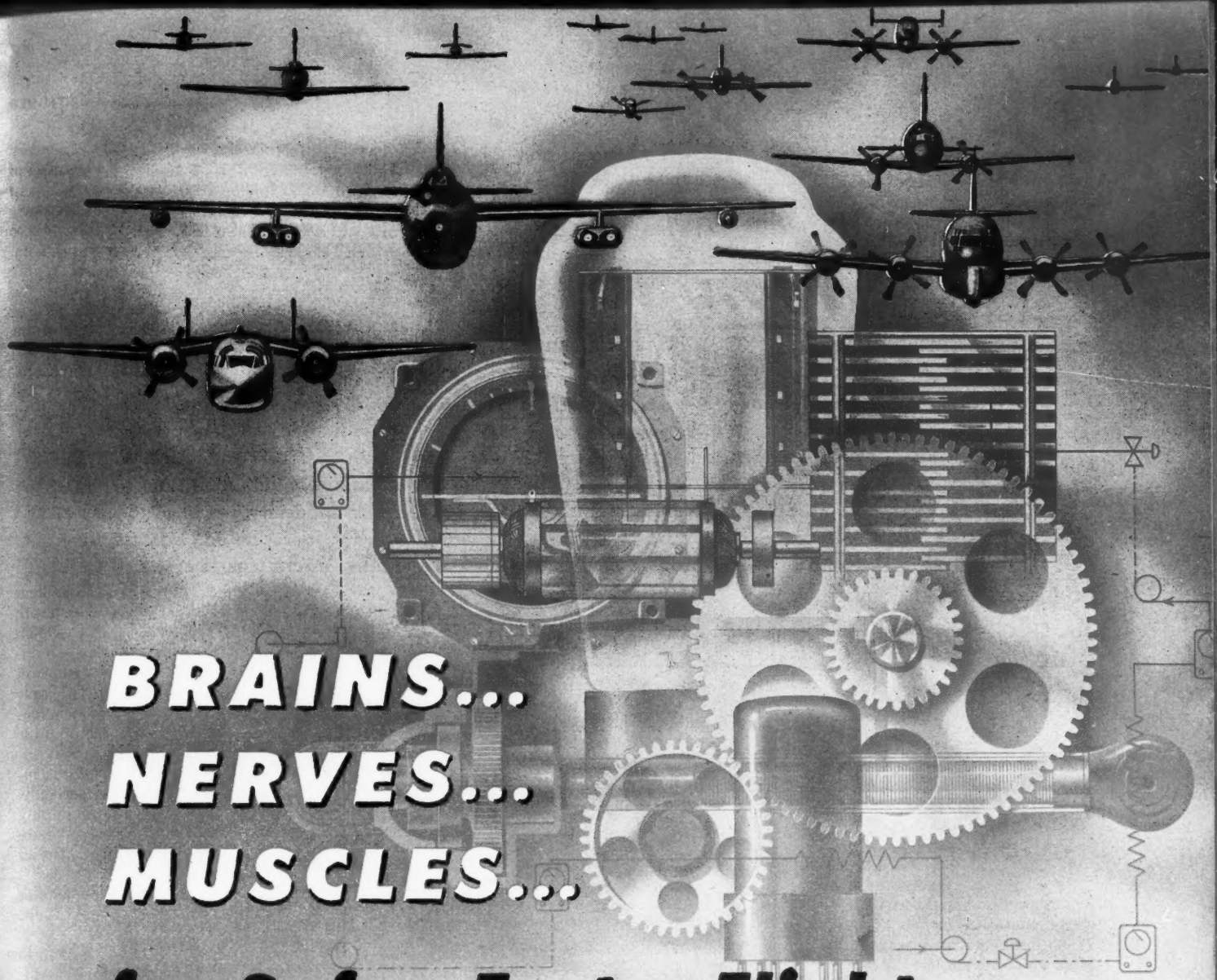
Maj. Gen. N. B. Harbold, USAF
Director of Training
Washington, D. C.

• *Please see* "Airpower in the News," *page 11, this issue.*—The Editors

Reference Material

Gentlemen: As Commanding Officer of a unit in the Volunteer Air Reserve Training program I have started to use your magazine, our magazine that is, regularly during the training period of our Unit Training Assemblies. By dogearing the necessary pages I can quickly read off the points of interest in a racy, journalistic manner with side comments if required. For those members interested in pursuing any subject further the magazine is available.

Maj. Robert S. Lawson
9263d VART Sqdn.
White Plains, N. Y.



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Lear Instrument Products and Electro-Mechanical Equipment promote safety by conserving the pilot's energy for those procedures where human decision is essential. These precision-engineered, service-tested units anticipate, measure and apply throughout airframe and engine the forces necessary to maintain required conditions of flight. In aircraft ranging from small private planes to the most modern types of commercial and military planes, Lear control and actuating systems are operating and positioning flight control surfaces, landing gear, shutters, doors and other aircraft parts essential to flight.

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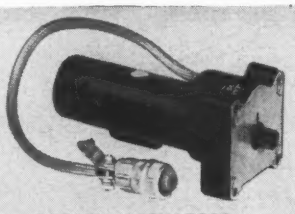
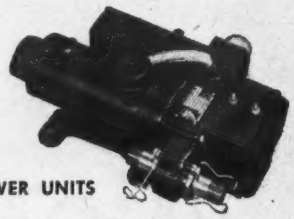


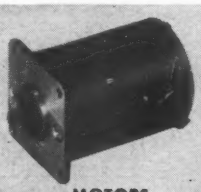
ROTARY ACTUATORS

Rotating shaft with high-strength rigid "arm" for fast operation. Weight 2 to 8 lbs., apply operating torques of 10 to 650 lb. in.



POWER UNITS

Provide power for Lear accessories through Lear Flexible Shafting. Weight 3½ to 11½ lbs., apply operating torque of 1.8 to 115 lb. in.

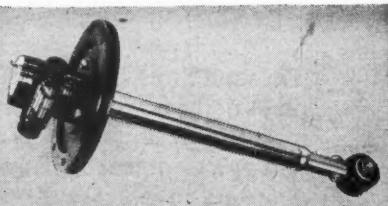


MOTORS

Highly specialized, compact, light-weight design. Range from 1/40th hp., weight 1-1/5 oz. to 7 hp., weight 9 lbs. Wide range standard and special voltages.

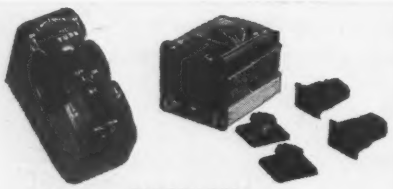
FASTOP® ELECTRO-MAGNETIC CLUTCH

Brings output shaft to dead stop in 1/50th second, for fast, positive positioning. Broad range of sizes; used in most Lear Motors.



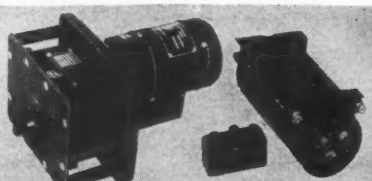
SCREW JACKS

Convert rotating into straight line motion. Permit multi-drives from single source. Handle loads 150 lbs. to 2,200 lbs., hold against 2,500 lbs.



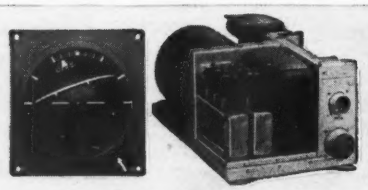
AUTOPILOTS

Compact, light-weight, perform any normal flight maneuver automatically and with unequalled precision. Used in single, multi-engine and jet aircraft, commercial and military.



DAMPING CONTROL

Compact, light-weight rate gyro and servo-actuator system. Measures rate and corrects deviation of aircraft from initial course. Available for various types.



VERTICAL GYRO INDICATOR

Accurate, quick-response system comprised of 5" presentation and control. Latter includes vertical and rate gyros, servo channels, power supply, capacitor and relay.

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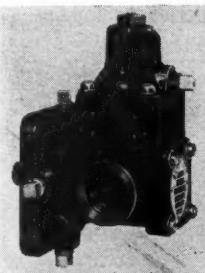
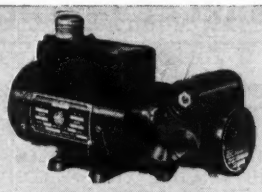
LEAR-ROMEC DIVISION



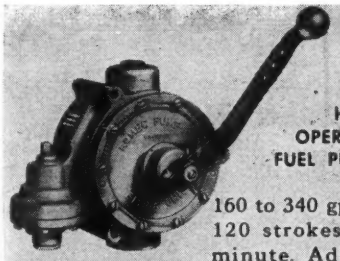
ENGINE-DRIVEN FUEL PUMPS

Positive-displacement, non-pulsating, rotary blade, 2 to 700 gph. Feed standard and aromatic fuels to carburetor or fuel injection system.



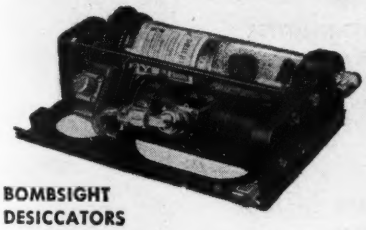
ELECTRIC MOTOR DRIVEN FUEL PUMPS

Rotary vane, non-pulsating, positive displacement, 35 to 1500 gph. Remove all fuel from refueling manifold, supply fuel to heaters, alcohol to fuel filters.



HAND OPERATED FUEL PUMPS

160 to 340 gph. at 120 strokes per minute. Adjustable poppet or balanced relief valve for all carburetor pressures. Barrel pump also available, 10 gpm.

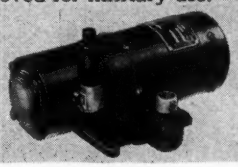


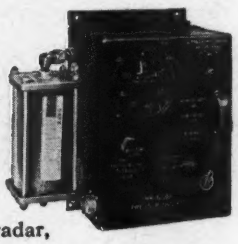
BOMBSIGHT DESICCATORS

Pump and de-humidify air in closed system to prevent frosting of lenses of aircraft periscopic bombsights.

AIRCRAFT PRESSURIZING EQUIP'T AND AIR PUMPS

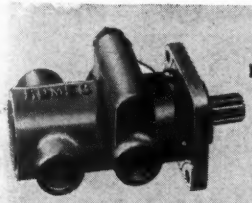
Lear-Romec Dry-air, oil-free equipment includes Air-Filter Dehydrators, Absolute Pressure Switches, Air Valves, Remote Control Panels. Approved for military use.





PRESSURIZING KITS

Maintain constant pressure of clean dehydrated air in radar, other plenums of aircraft. Also used to pressurize hydraulic oil tank, prevent cavitation in pumps.



LUBRICATING AND SCAVENGE PUMPS

Used on gas turbine engines, supply lubricating oil to bearings, scavenge excess oil. Available in 1, 2, or 3 elements, various capacities and pressures, or built to specifications.

HYDRAULIC AND OIL TRANSFER PUMPS

Designed to pressurize suction line to hydraulic pumps—transfer oil from fuselage oil tank—supply lube oil to gas turbine engine—hydraulic pressure for gyros, etc.

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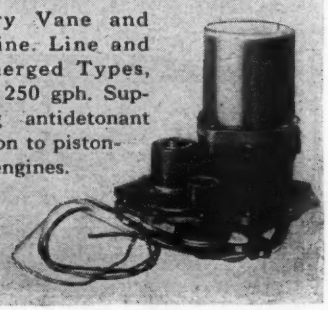
Rotary Vane and Turbine. Line and Submerged Types, 20 to 250 gph. Supplying antidetonant solution to piston-type engines.



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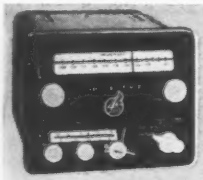

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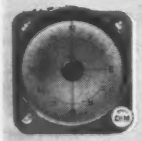

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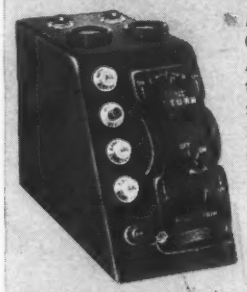

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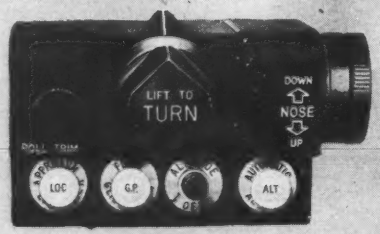

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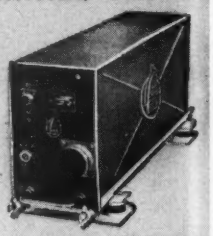

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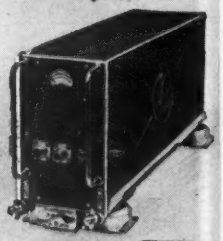

560 CHANNEL VHF RECEIVER
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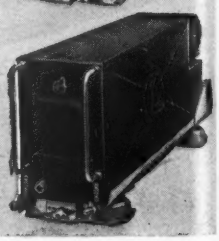

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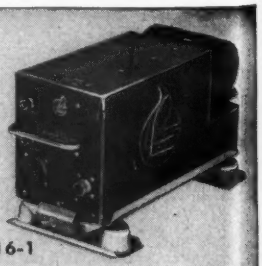

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AIRPOWER IN THE NEWS

BY JAKE CULPEPPER

OBSERVERS — Shortage of aircraft observers is currently a headache to AF personnel procurement officials. Airmen with an eye toward an AF commission will find their best bet in observer training program. Budget limitations have caused a seventy-five percent cut in the OCS program and a six months backlog of pilot training applicants.

AF-ROTC — Students in the AF-ROTC program graduating next June must sign up for flight training or be dropped. Those to get engineering or other "critical" specialty degrees will not be affected. Students who do not apply or do not qualify for flight training can finish out the school year and graduate under existing Selective Service regulations, if they haven't already had an exemption on this ground. Dr. John A. Hannah, Assistant Secretary of Defense for manpower, admitted his new policy breached a "moral" contract with the students who enrolled in the ROTC program, but blamed the action on reduced manpower ceilings and the reduced AF budget. Although only approximately one-third of the 1953 class applied for flight training, active duty calls will go out during the coming year to the entire graduating class from last June (one-third in October, one-third in February, and the remainder in May). AF is reviewing officers' records to weed out ineffectives to make room for this past year's ROTC crop. Meanwhile, AF is giving top priority for acceptance to advanced ROTC training to those desiring flight training. (See "Airpower in the News," June '53) . . . About 160 officers and 140 airmen are needed to fill vacancies in the AF-ROTC program. Rated officers with baccalaureate degrees who qualify as instructors are sought to fill vacant assistant professor of air science and tactics positions (majors, captains, and first lieutenants are wanted at this time). Airmen posts are open to enlisted men with rank of staff sergeant or above in the educational, supply, and personnel career fields.

TRANSITION — Atomic energy orientation has begun for rated permanent party personnel in Crew Training AF. . . . Seattle's new hangar will have the largest unobstructed doorway in the country, 785 feet long, 65 feet high, and designed to house four B-52 Stratoforts at once.

STAFF — New assignments: Brig. Gen. Kurt M. Landon, chief of staff, ARDC; Brig. Gen. Edward H. Alexander, chief of staff, 18th AF; Col. Raymond T. Jenkins, 18th AF surgeon; Gen. Lauris Norstad, Air Deputy to Supreme Allied Commander, Europe; Lt. Gen. William Tunner, Commander-in-Chief, USAFE; Lt. Gen. Donald L. Putt, commander of ARDC. Officers recently retired under 1947 personnel act (years of service depending on grade) are: Brig. Gen. Charles Y. Banfill, Brig. Gen. Ray H. Clark, Maj. Gen. Alden R. Crawford, Maj. Gen. Joseph V. DeP. Dillon, Brig. Gen. Alonzo M. Drake, Brig. Gen. James F. Early, Brig. Gen. A. Robert Ginsburgh, Brig. Gen. Wildred H. Hardy, Maj. Gen. Joseph H. Hicks (recalled to active duty August 1), and Brig. Gen. Emil C. Kiel. Also Brig. Gen. Joseph T. Morris, Brig. Gen. Robert C. Oliver, Maj. Gen. James F. Powell, Brig. Gen. Max F. Schneider, Brig. Gen. Ralph A. Snavely, Brig. Gen. Augy C. Strickland, Brig. Gen. Clarence P. Talbot, Maj. Gen. John M. Weikert, and Brig. Gen. Robert W. C. Winsatt. Maj. Gen. Willard R. Wolfinbarger and Brig. Gen. Otis B. Schreuder retired voluntarily with a record of World War I service. Following general officers are reserve officers to become inactive Reservists as of last July 31: Brig. Gen. Augustus F. Gearhard, Brig. Gen. George W. Goddard, and Maj. Gen. Edmund C. Lynch.

1912 Lawrence Sperry, at 19, flew automatically with the first Sperry Stabilizer at Hammondsport, New York. Later, in a Curtiss flying boat, he competed in 1914 with 80 entrants for an award offered by the French for the first "stable airplane." Sperry won—in a dramatic demonstration in which the little plane flew by itself while Sperry held his hands above his head and his mechanic walked on the wing.

AUTOMATIC F

C FLIGHT... another Sperry first... 1912

From the day in June, 1914, when Lawrence Sperry won the French War Department's 50,000 franc prize for the first "stable airplane," Sperry has taken the lead in making flying more and more automatic . . . as flying itself has required more and more precision. From the first simple stabilizers have come development after development, such as the Sperry Automatic Pilot and Automatic Approach Control to guide planes to better landings under all weather conditions.

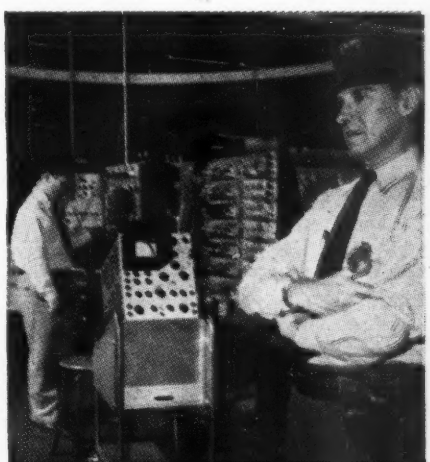
TODAY, AS ALWAYS, SPERRY LEADS THE WAY

In production today at Sperry are instruments that give man even greater mastery of the elements. And the military demand is so great that hundreds of subcontractors are now sharing with Sperry the task of meeting these requirements.

1933 Wiley Post in the Winnie Mae made first solo, round-the-world flight. Using the Sperry Automatic Pilot, Post startled the world by stating that during flight he was able to take naps while the plane, under automatic control, flew itself. Post explained that a wrench tied to his fingers slipped from his hand to awaken him if he fell sound asleep, so he could check his course and make course changes if necessary.

1946 United Air Lines installed Sperry A-12 Gyropilot on four-engine fleet to insure precise automatic instrument approaches to airport runway. UAL President, W. A. Patterson, considered installation . . . "a definite start in eliminating weather as an obstacle to airline operations."

1953 USAF's Boeing B-47B is equipped with Sperry Gyropilot, combining the latest in gyroscopic, servo, and signal system techniques. This automatic flight control system meets strategic requirements for high-altitude, long-range missions and automatic precision bombing runs.



19?? Automatic flight of tomorrow? Sperry laboratories are now busy solving automatic control problems for jets and missiles of the future. When they fly, precision automatic devices being developed by Sperry today will control them.

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Shooting the Breeze

A SPECIAL issue of any magazine is something which the advertising department anticipates in high glee but which the editorial staff can only view with dim forebodings of sleepless nights and ulcerous days. But it has its compensations if one can feel, as he looks at the finished product, a sense that he has, if only in a small way, done something bigger, better, or different than it has ever been done before. That's a little the way we feel about this issue and the two anniversary issues which preceded it. Whether or not our feeling is justified, it does exist.

We have often been asked why we do not build our special issue around a central theme and carry it through from cover to cover. Our answer is that, as notable as such an issue may be as an editorial *tour de force*, it fails in one cardinal requirement — balance. We try to have a little of a lot of things, including good solid hunks of reference meat to go along with the appetizer and the dessert. That's why we continue to print our guide to Air Force bases and our command and staff charts together with large lacings of feature material. We want it to be the kind of magazine you keep around the place for months "to look things up in," yet we don't want it to be so dull that you file it without reading. This latest effort is the most ambitious in the history of AIR FORCE Magazine. We hope you like it.—END

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Vol. 36, No. 9 — ANNIVERSARY ISSUE — September 1953

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AIR FORCE Magazine is mailed monthly to all members of the Air Force Association. There are several ways you can become a member. If you were in the Air Force or its predecessor services, you're eligible. The $5 yearly dues include the magazine. Or if now on active duty, you can be a Service Member. Those interested in airpower can become Associate Members for $5 per year. The cost for CAP and AF-ROTC cadets is $3 per year. Details of membership in AFA on page 148.

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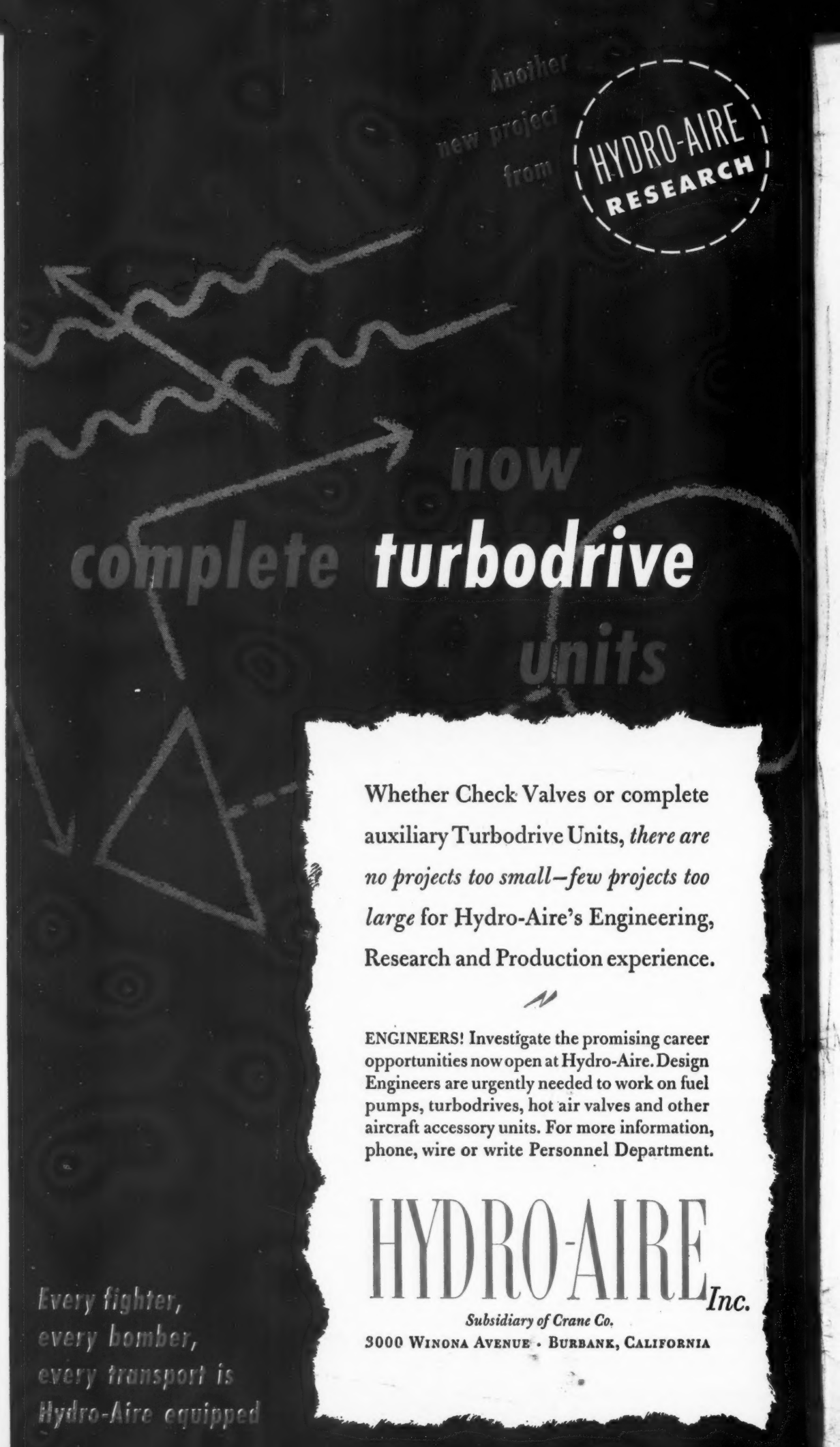

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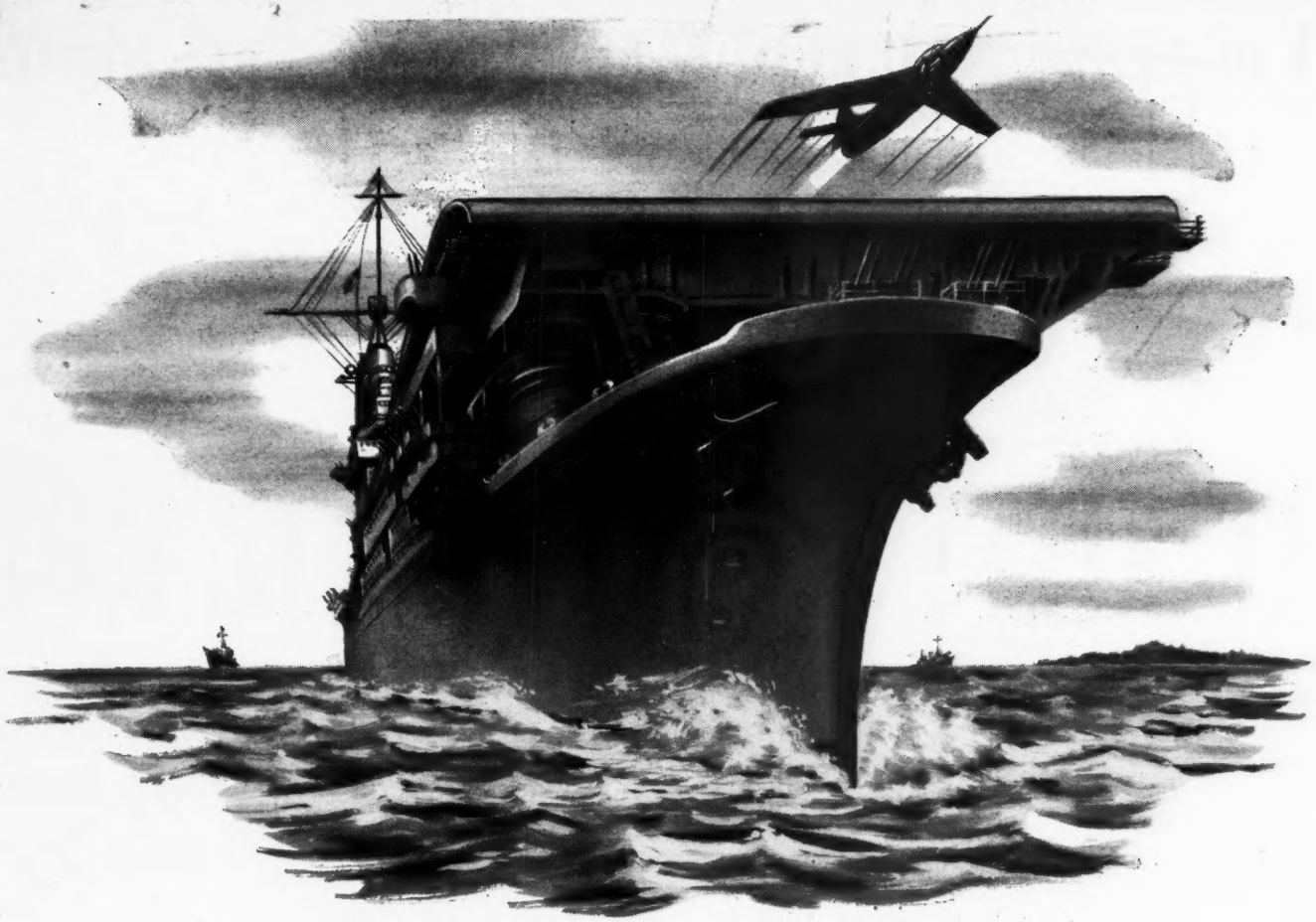

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It is conceded that all elements of the national defense network are interwoven with electronics. Therefore, it is vital to every phase of national security—land—sea—air—that communications, navigation, detection and ordnance equipment shall include only *reliable* electronics systems

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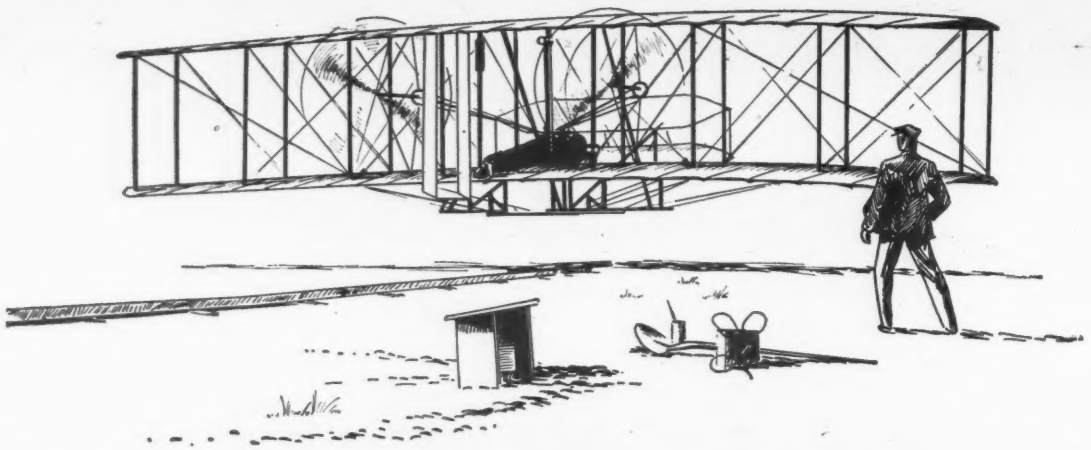


AT KITTY HAWK—DEC. 17, 1903

Orville Wright's own story of the epochal first flight as recorded in his diary for that date. He was not excited; he and Wilbur had only done what they had set out to do—fly

WHEN WE got up, a wind of between twenty and twenty-five miles was blowing from the north. We got the machine out early and put out the signal for the men at the station. Before we were quite ready, John T. Daniels, W. S. Dough, A. D. Etheridge, W. C. Brinkley of Manteo, and Johnny Moore of Nag's Head arrived. After running the engine and propellers a few minutes to get them in working order, I got on the machine at 10:35 for the first trial. The wind according to our anemometer at this time was blowing a little over twenty miles (corrected), twenty-seven miles according to the Government anemometer at Kitty Hawk. On slipping the rope the machine started off increasing in speed to probably seven or eight miles. The machine lifted from the truck just as it was entering on the fourth rail. Mr. Daniels took a picture just as it left the trucks.

Reprinted with permission from "Miracle at Kitty Hawk," edited by Fred C. Kelly; Farrar, Straus & Young, $6.

I found the control of the front rudder quite difficult on account of its being balanced too near the center and thus had a tendency to turn itself when started so that the rudder was turned too far on one side and then too far on the other. As a result the machine would rise suddenly to about ten feet and then as suddenly, on turning the rudder, dart for the ground. A sudden dart when out about 100 feet from the end of the track ended the flight. Time about twelve seconds (not known exactly as watch was not promptly stopped). The flight lever for throwing off the engine was broken, and the skid was cracked.

After repairs, at twenty minutes after eleven o'clock Will made the second trial. The course was about like mine, up and down but a little longer . . . over the ground though about the same in time. Distance not measured but about 175 feet. Wind speed not quite so strong.

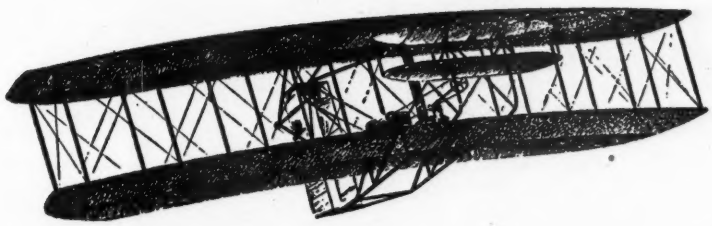
With the aid of the station men present, we picked the machine up and carried it back to the starting ways. At about twenty minutes till twelve o'clock I made the third trial. When out about the same distance as Will's, I met with a strong gust from the left which raised the left wing and sidled the machine off to the right in a lively manner. I immediately turned the rudder to bring the machine down and then worked the end control. Much to our surprise, on reaching the ground the left wing struck first, showing the lateral control of this machine much more effective than on any of our former ones. At the time of its sidling it had raised to a height of probably twelve to fourteen feet.

At just twelve o'clock Will started on the fourth and last trip. The machine started off with its ups and downs as it had before, but by the time he had gone three or four hundred feet he had it under much better control, and was traveling on a fairly even course. It proceeded in this manner till it reached a small hummock out about 800 feet from the starting ways, when it began its pitching again and suddenly darted into the ground. The front rudder frame was badly broken up, but the main frame suffered none at all. The distance over the ground was 852 feet in fifty-nine seconds. The engine turns was 1,071, but this included several seconds while on the starting ways and probably about a half second after landing. The jar of landing had set the watch on the machine back, so that we have no exact record for the 1,071 turns. Will took a picture of my third flight just before the gust struck the machine. The machine left the ways successfully at every trial, and the track was never caught by the trucks as we had feared.—END

ANNIVERSARY CELEBRATION

Once again the Air Force Association and the Kill Devil Hills Memorial Society are collaborating on the annual observance of the Wright Brothers' first flight. Among other things, the original site will be reconstructed with funds raised through popular subscription.—The Editors.

Wright Brothers *pioneers in piston power in 1903*



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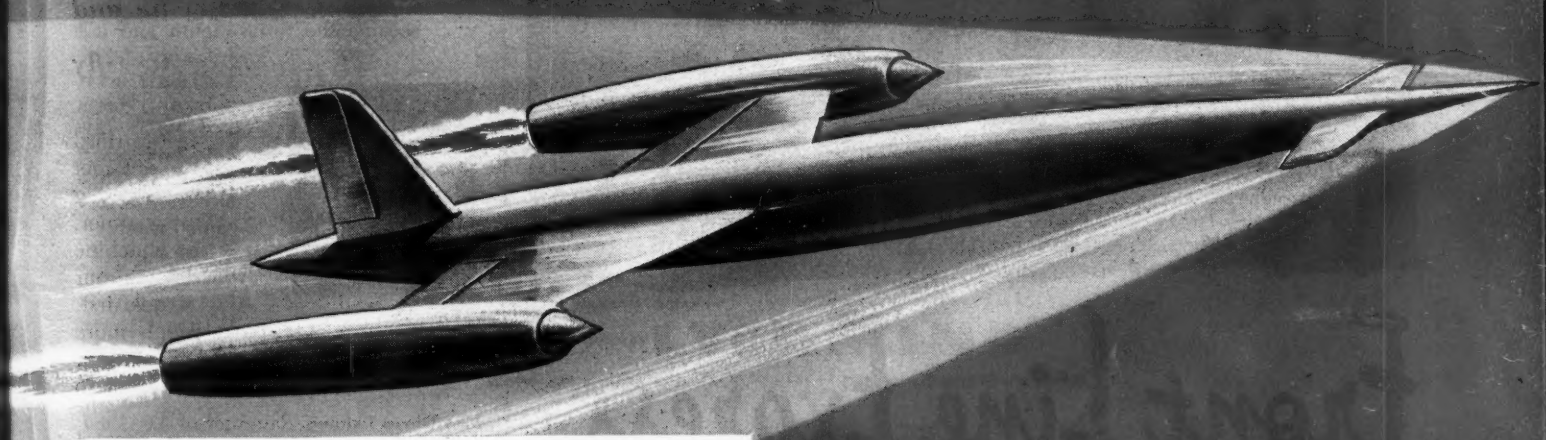
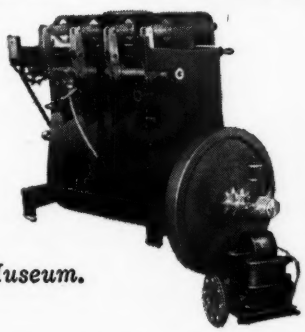
50TH ANNIVERSARY OF POWERED FLIGHT
SECURITY

marquardt *pioneers in jet power in 1953*



The Institute of Aeronautical Sciences selected Marquardt engineers to produce the replica of the original Wright Brothers engine for permanent display at their Durand Aeronautical Museum.



Aviation has come a long way from the piston powered craft in 1903, pioneered by the Wright Brothers, to ramjet speeds of mach 4. Marquardt has been the pioneer in the research and development of ramjets, afterburners, air turbine accessory drives and thrust controls of advanced design. These units are currently in production to meet your requirements. Let us send you our illustrated engineering manuals.

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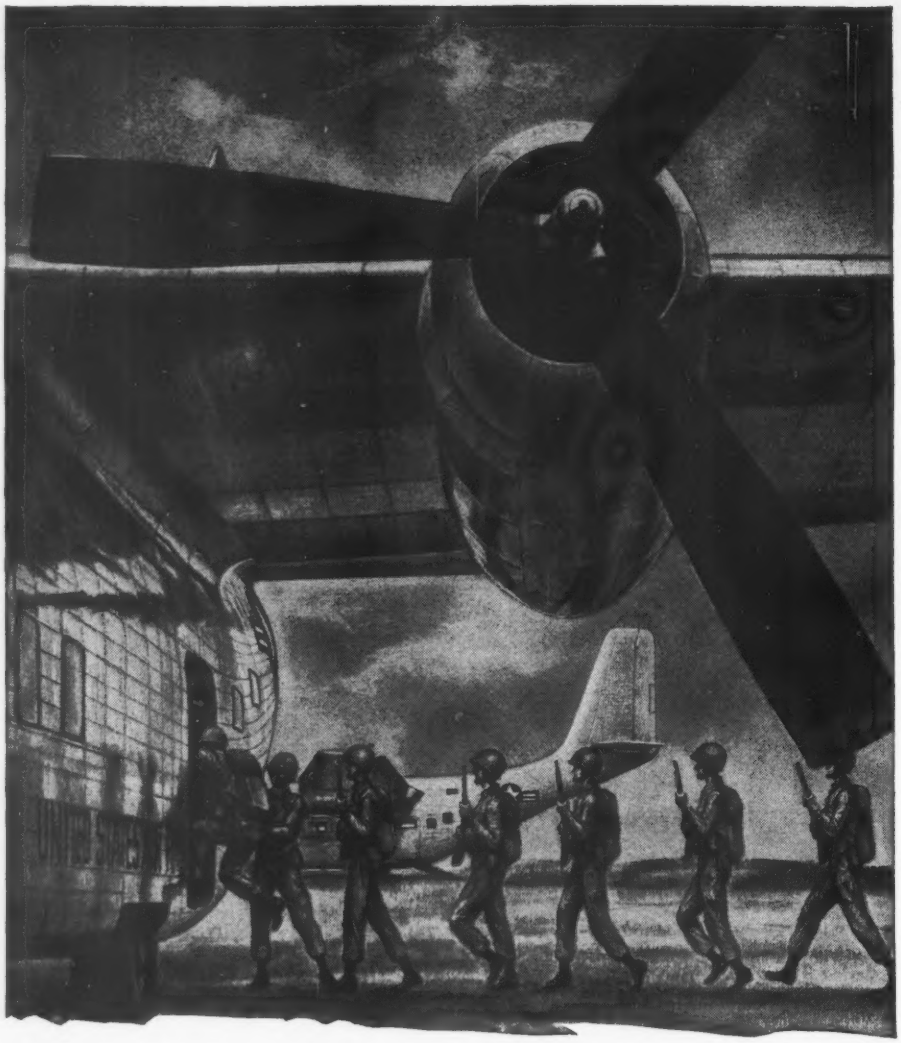

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PEOPLE

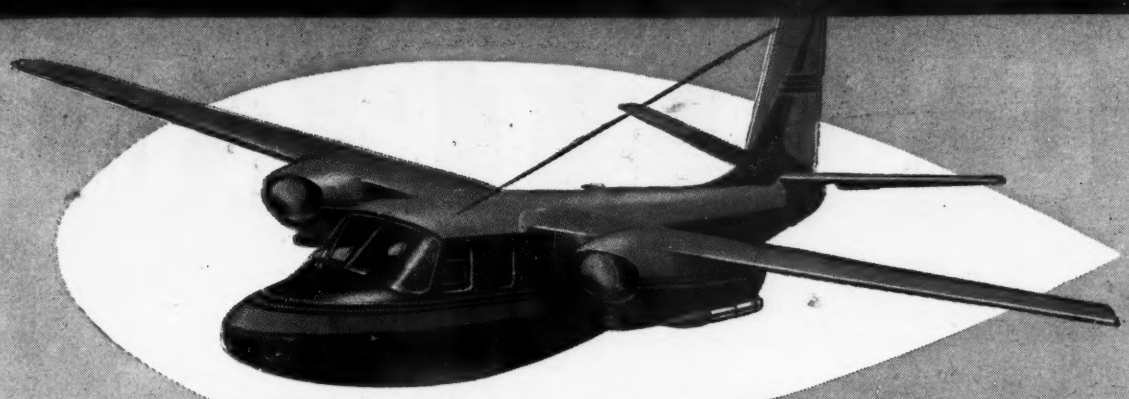
IN THE AIR NEWS

Maj. John F. Bolt, a USMC exchange pilot flying F-86s with the AF's 51st F-1 Wing in Korea, who destroyed a pair of MIG-15s July 11 to become jet ace number thirty-seven. Bolt, who's from Sanford, Fla., had earlier shot down four MIGs and damaged two. The final total of MIG kills in the Korean war reached 800, at a loss of only 58 Sabrejets in air-to-air combat.

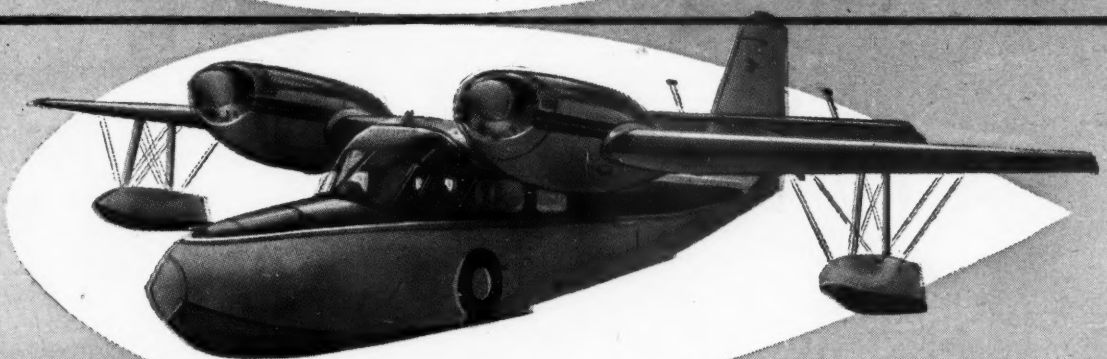
Capt. Clyde A. Curtin of Portland, Ore., who became the thirty-eighth and last jet ace of the Korean war, shooting down two MIGs July 19, just two weeks before the truce became effective. A member of the 4th Fighter-Interceptor Wing, Curtin had earlier destroyed three MIGs and damaged three other Red jet fighters.

Miss Olivia Twining, daughter of AF Chief of Staff Gen. Nathan F. Twining (see page 28), who was named Miss Airpower of 1953 by Air Force Association and took part in AFA's Convention in Washington August 20-23. She modeled the Airpower Gown designed for her by Oleg Cassini of New York to symbolize the modern air age.

Capt. Ralph S. Parr, F-86 pilot and jet ace of the 4th Fighter-Interceptor Wing in Korea who destroyed the final enemy aircraft of the Korean war. On his last mission a few hours before the truce, Parr shot down an IL-12 twin-engine transport deep in North Korea. The Reds later protested the transport had been over neutral territory.



Aero-Commander. Seats 6. Powered by two 260-h.p. Lycoming air-cooled, geared engines.



Grumman Widgeon Conversion. Amphibious flying "office" featuring 260-h.p. air-cooled, geared engines by Lycoming.

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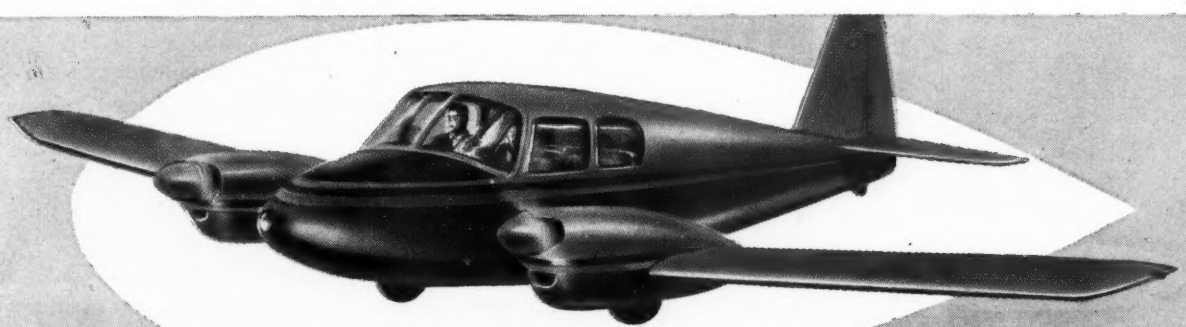
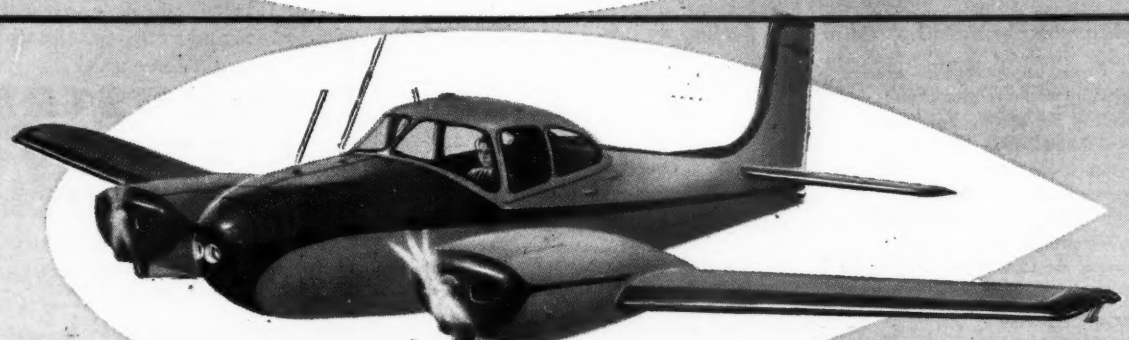
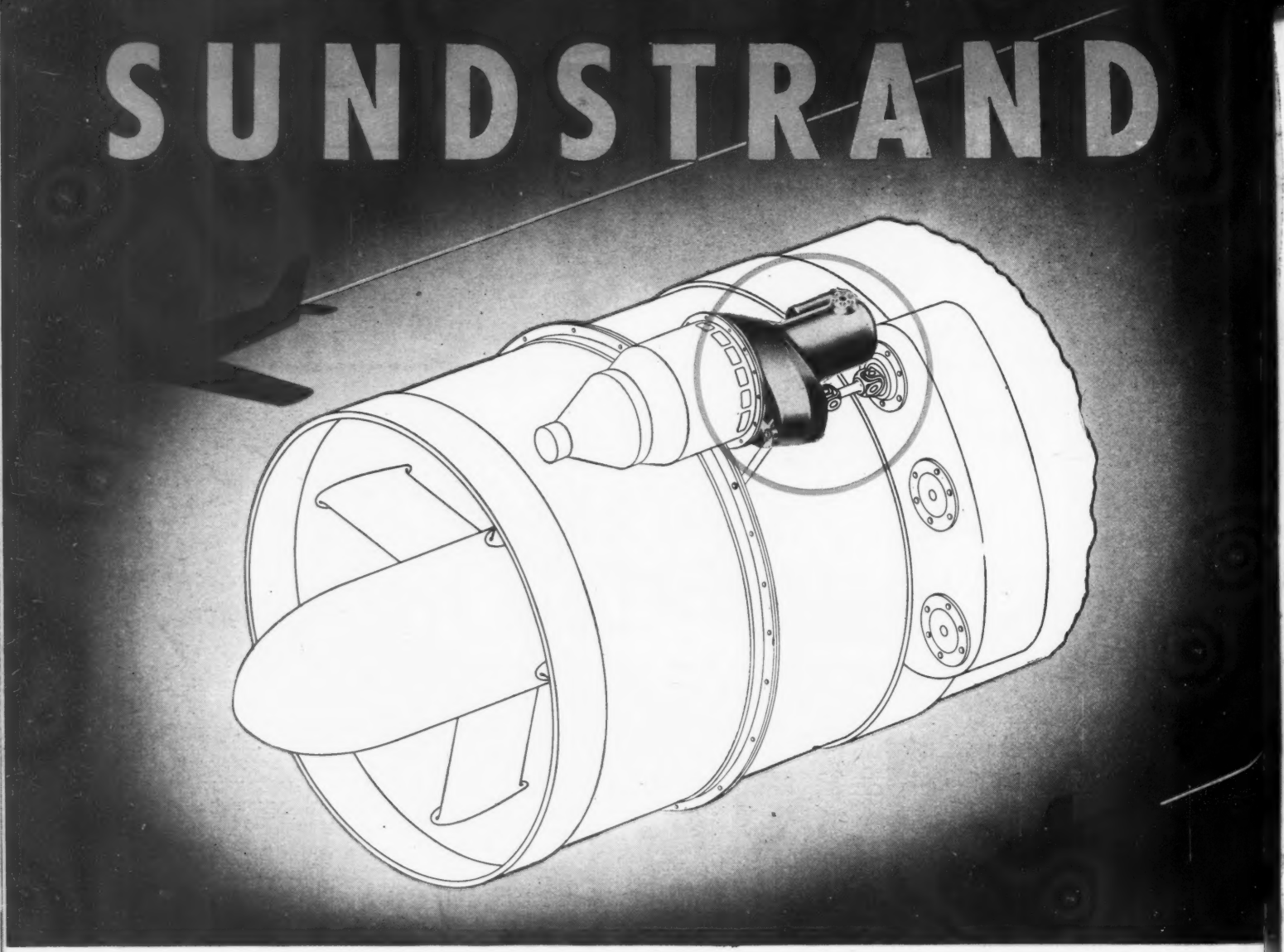


Piper Apache. Seats 4. Dependably powered by two 150-h.p. air-cooled Lycoming engines.

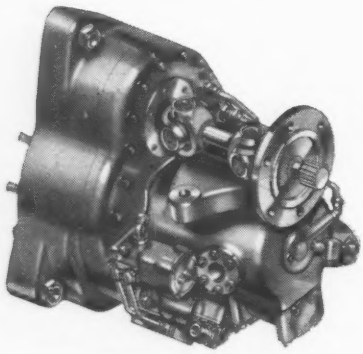


Riley Twin Navion Conversion. 4-place executive plane powered by two 150-h.p. air-cooled Lycoming engines.

SUNDSTRAND



Package-Type Constant Speed Drive . . . now adapted for jet engine applications!



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Package-Type Drives (shown above) are being used on some of the nation's leading military aircraft for driving A-C generators. Engine speeds, from windmilling to full military thrust, are converted by the drive to hold generator frequency constant at 400 cycles ± ¼% under steady state conditions. Drives operating generators in parallel will divide load within ± 2 KW.

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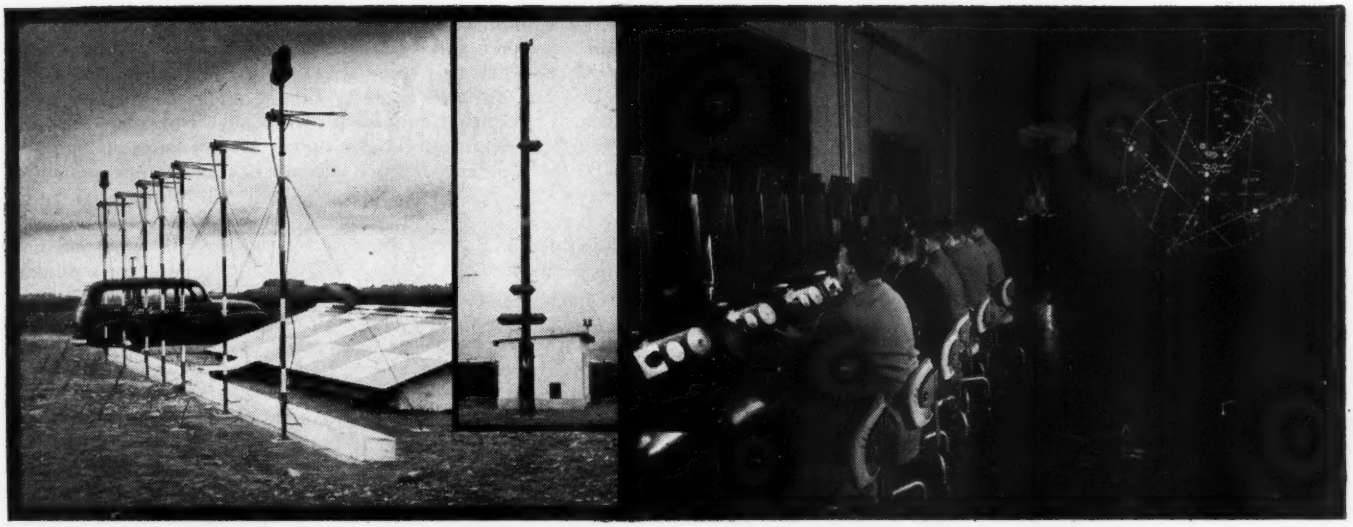

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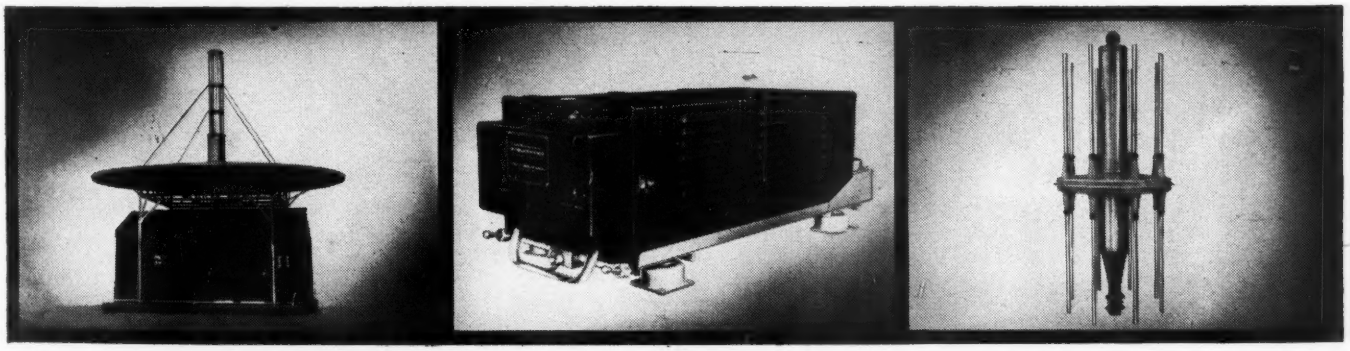
Air traffic control system... shows position and flight paths of several aircraft on large translucent screen (144 sq. ft.). Can also be used as radar and control simulator to study traffic conditions; includes speed-up and anticipation features. This Navascreen was developed for the U. S. Air Force.



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To Clarify the Air Defense Record

There are still a few misconceptions

WE HAD hoped that our staff study "The Truth About Our Air Defense" in the May 1953 issue of AIR FORCE, had clarified the situation once and for all. Unfortunately, recent articles and public statements indicate that considerable confusion still exists about the so-called "conflict" between the scientists and the Air Force. Project Lincoln, the Lincoln Laboratory, the Lincoln Summer Study Group, and the committee of scientists headed by Dr. Mervin J. Kelly of Bell Laboratories are still being indiscriminately lumped together as the unanimous voice of science and technology against whose recommendation the Air Force is mulishly straining. Without delving once more into the "controversy" we'd like to straighten out a few basic facts.

1. Project Lincoln was set up in September 1951 as the outgrowth of a tri-service study group on air defense known as Project Charles. Lincoln was undertaken at the request of the USAF together with the Army and Navy. Massachusetts Institute of Technology agreed to organize and administer the project. Lincoln's primary purpose was to develop improved equipment, systems, and techniques for the defense of continental North America.

2. The Air Force put up the money for a series of buildings near Bedford Airport, Mass. These are the Lincoln Laboratories whose day-to-day technical effort now going on under Dr. Albert G. Hill is still called Project Lincoln.

3. In the summer of 1952 Lincoln's Steering Committee invited a number of senior scientists to review Project Lincoln's first year's work. Among other things, the new group, nicknamed the "Summer Study Group," was to take a look at the air defense problem for the period 1960-1970.

4. However, the Summer Study Group soon diverted its principal attention to the problem of distant early warning, considered by many of them to be the weakest link in the family of weapons being considered by Project Lincoln. The Summer Group eventually produced a report saying, in effect, that more early warning was needed and suggesting a number of ways to achieve it.

5. The Summer Study Group report was transmitted officially to the Air Force and immediately taken under consideration by the Air Staff. At the same time the findings were transmitted through the National Security Resources Board directly to the National Security Council—the so-called "end run" evidently designed to embarrass the Air Force. After a series of high level meetings President Truman directed a maximum immediate effort to establish the early warning line recommended by the Summer Study Group.

6. The USAF got the job of establishing this line and initiated a contract with the Bell Telephone Company for a program of equipment development. This is well under way and a northern early warning line—not as far north as the Summer Study Group proposed but more nearly the one proposed by the Canadian government—should be operating in about three years.

Meanwhile a five-month study of the nation's air defense, made by a Citizens Advisory Committee headed by Mervin J. Kelly, President of Bell Laboratories, concluded that what should be done was just about what the Air Force had been doing—expanding the early warning network, improving active air defense capability, maintaining a strong retaliatory striking force.—The Editors.

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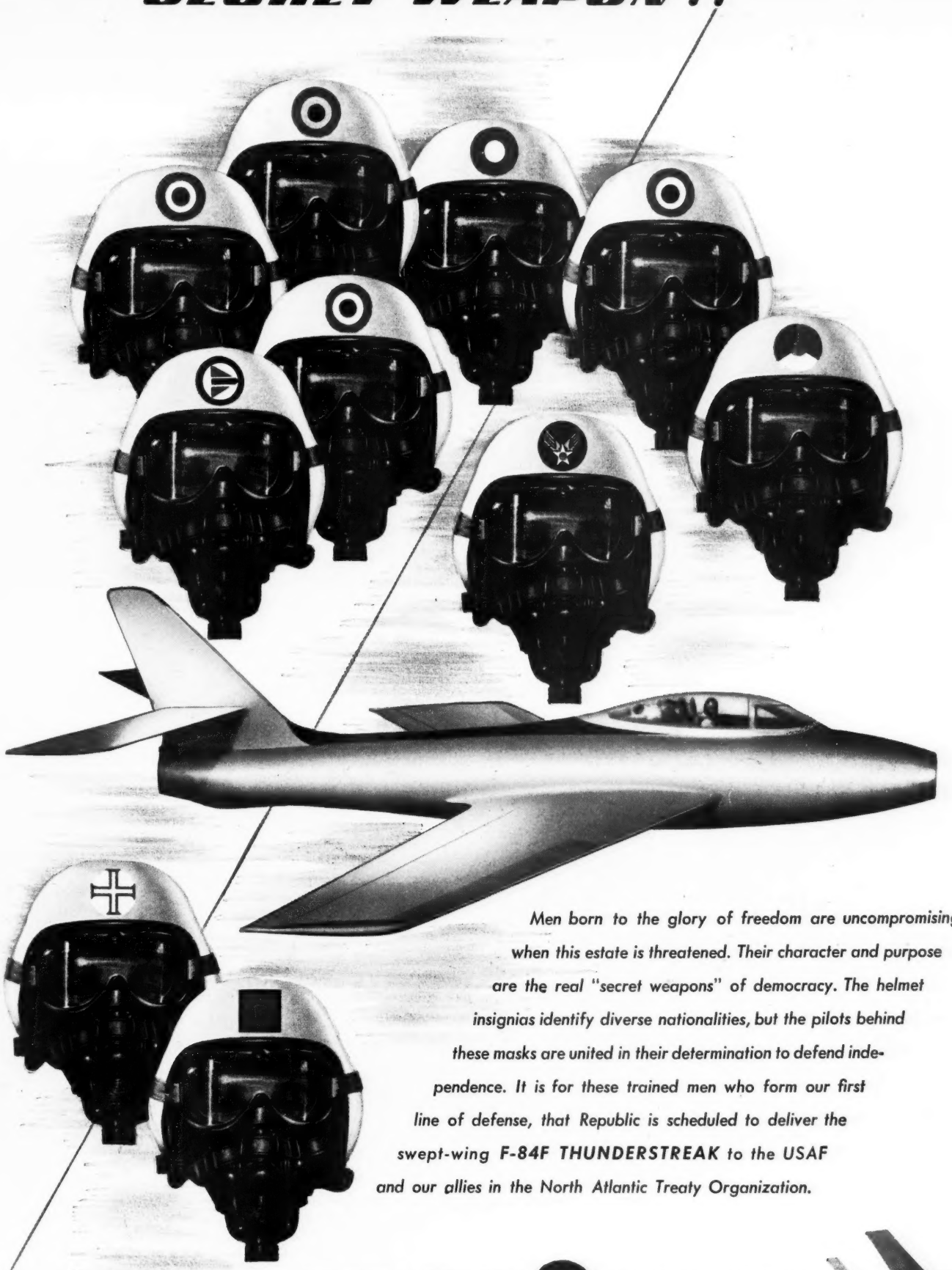

Men born to the glory of freedom are uncompromising when this estate is threatened. Their character and purpose are the real "secret weapons" of democracy. The helmet insignias identify diverse nationalities, but the pilots behind these masks are united in their determination to defend independence. It is for these trained men who form our first line of defense, that Republic is scheduled to deliver the swept-wing ***F-84F THUNDERSTREAK*** *to the USAF and our allies in the North Atlantic Treaty Organization.*

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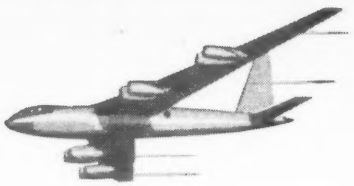
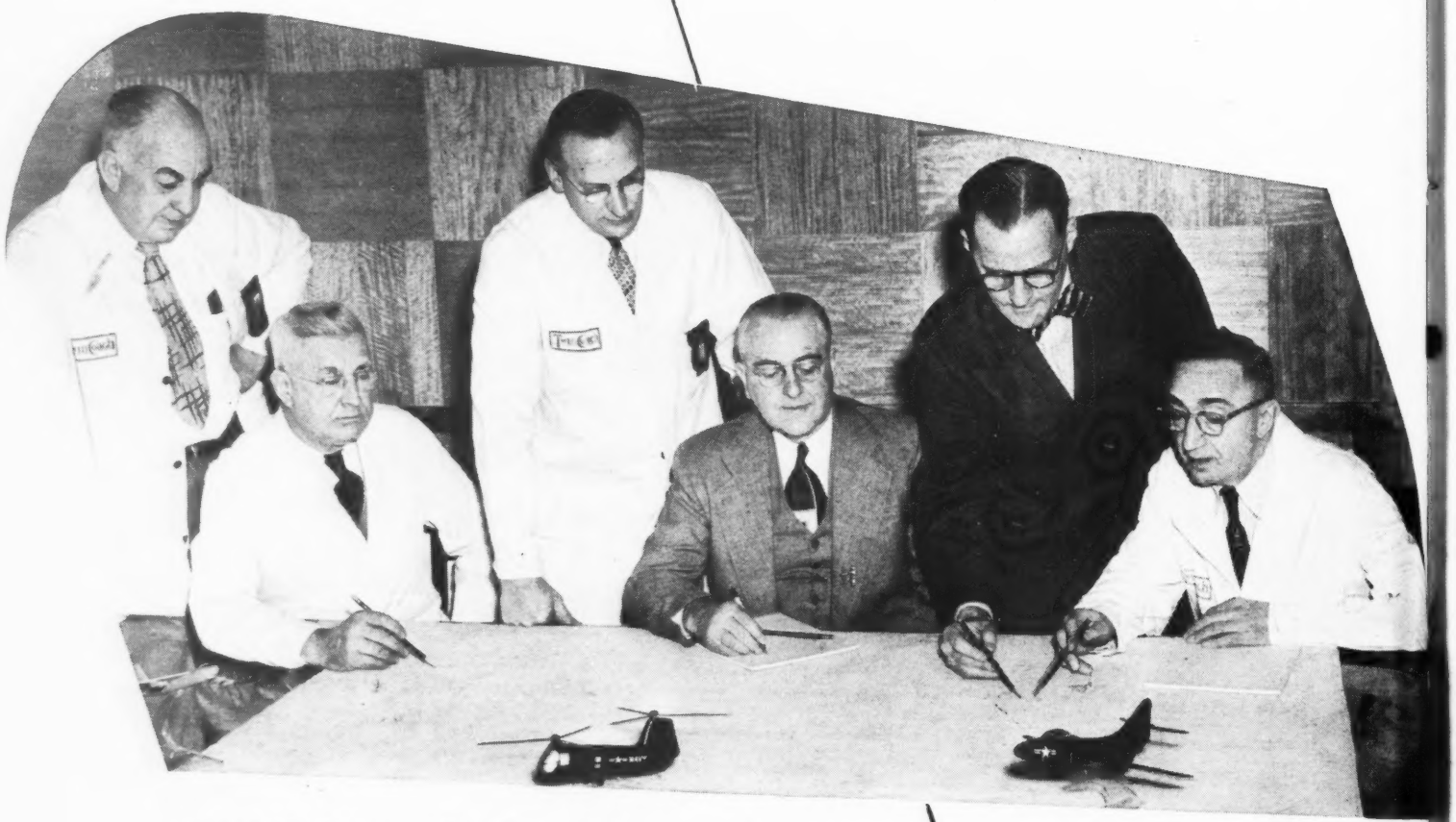


You can buy experience



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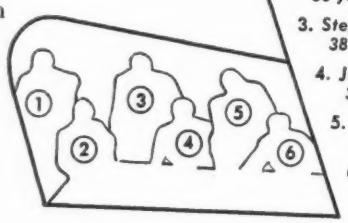

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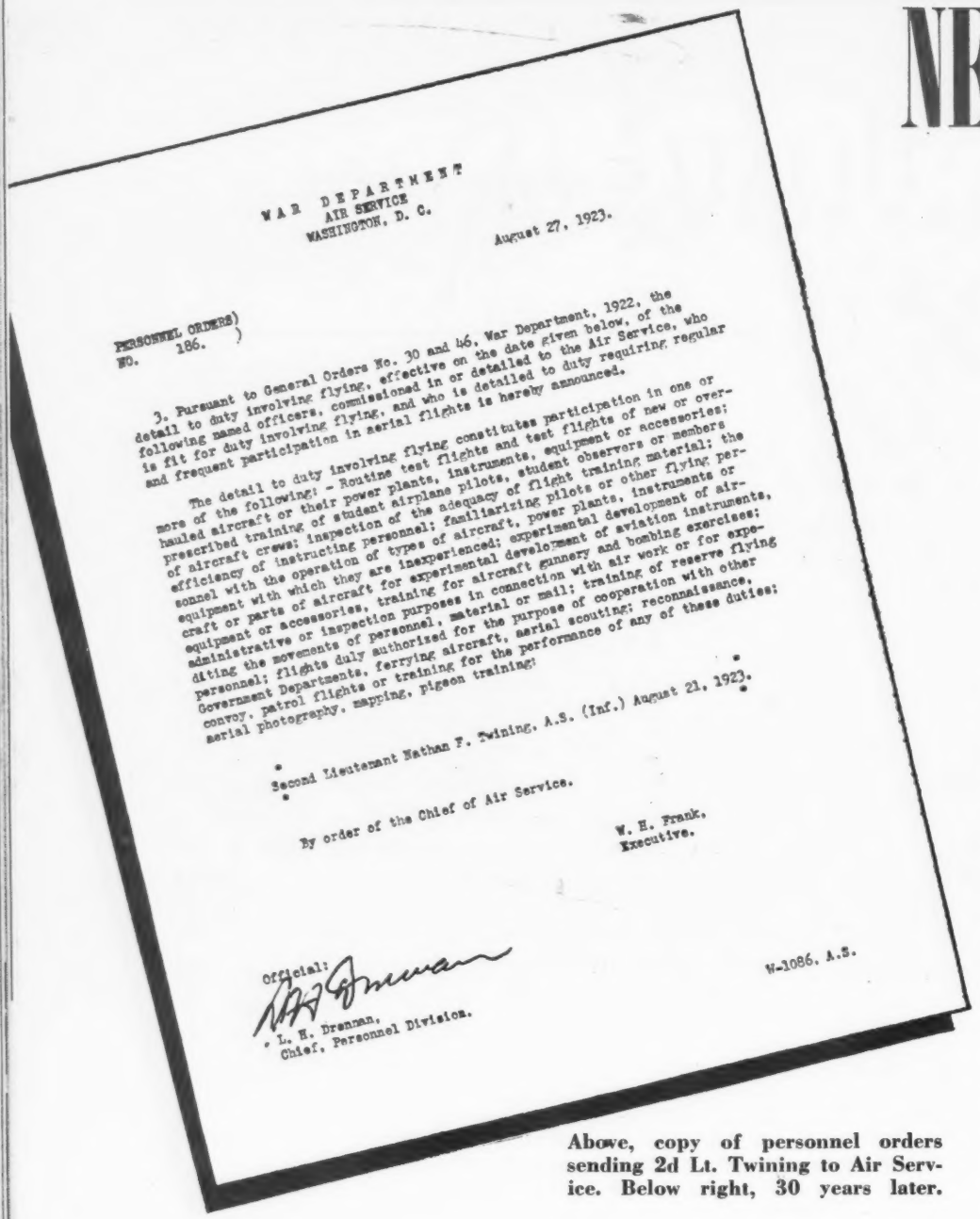


WAR DEPARTMENT
AIR SERVICE
WASHINGTON, D. C.

August 27, 1923.

PERSONNEL ORDERS)
NO. 186.)

3. Pursuant to General Orders No. 30 and 46, War Department, 1922, the detail to duty involving flying, effective on the date given below, of the following named officers, commissioned in or detailed to the Air Service, who is fit for duty involving flying, and who is detailed to duty requiring regular and frequent participation in aerial flights is hereby announced.

The detail to duty involving flying constitutes participation in one or more of the following: - Routine test flights and test flights of new or overhauled aircraft or their power plants, instruments, equipment or accessories; prescribed training of student airplane pilots, student observers or members of aircraft crews; inspection of the adequacy of flight training material; the efficiency of instructing personnel; familiarizing pilots or other flying personnel with the operation of types of aircraft, power plants, instruments or equipment with which they are inexperienced; experimental development of aircraft or parts of aircraft for experimental gunnery and bombing exercises; equipment or accessories, training for aircraft, material or mail; training of reserve flying administrative or inspection purposes in connection with air work or for expediting the movements of personnel, material or mail; training of reserve flying personnel; flights duly authorized for the purpose of cooperation with other Government Departments, ferrying aircraft, aerial scouting; reconnaissance, convoy, patrol flights or training for the performance of any of these duties; aerial photography, mapping, pigeon training:

Second Lieutenant Nathan F. Twining, A.S. (Inf.) August 21, 1923.

By order of the Chief of Air Service.

W. H. Frank,
Executive.

Official:

L. H. Brannan,
Chief, Personnel Division.

W-1086, A.S.

Above, copy of personnel orders sending 2d Lt. Twining to Air Service. Below right, 30 years later.

AMERICA'S number one airman is a cigar-smoking, soft-voiced, handsome, grey-haired, rugged man of fifty-five, who has spent more than thirty-seven years in the service of his country. Although known primarily as a "big-bomber" man, he is also a "44-44 pilot"—four-thousand, four hundred and forty-four hours of single-engine time logged in his Form Five. He withstood six punishing days of hunger and thirst aboard a storm-tossed rubber liferaft in the Pacific, yet he could not bear to watch a surgeon sew up his young daughter's badly gashed leg.

He is Nathan Farragut Twining, recently appointed Chief of Staff of the USAF by President Eisenhower.

For the next two years he will shoulder tremendous responsibilities. From the time he leaves his roomy, red-brick quarters Number Eight at Fort Myer, Va., in the morning to go to the Pentagon, until he snaps off his bedside lamp after relaxing with a western story at night, his office follows him. Even in slumber there is no escape.

It is little wonder that he told Mrs. Twining of his new appointment in three short words:

"Well, I'm hooked."

Whether he is telephoning his wife, appearing before a Senate Armed Forces Committee, or stifling inner-anger, General Twining is sparing with words. Once Maj. Gen. Sory Smith, AF Public Information Officer, confronted the general in Twining's office with an editorial critically inaccurate concerning the Air Force.

By Everett E. Dodd

"Boss, you mad about this?"

"Yeh."

"How mad?"

"Damn mad!"

That was all—no rolling heads, no fans dirtied.

There are times, however, when such taciturnity can come close to backfiring. Like the moonlit night in Hawaii some years ago. The general—he was a lieutenant then—and a girl named Maude McKeever were out driving. Earlier that evening there had been a closeted man-to-man conference between Twining and Alexander M. McKeever, a Hawaiian sugar broker and Maude's father.

Lieutenant Twining was stationed at Schofield Barracks on the island of Oahu in Hawaii, flying P-12s with the Eighteenth Pursuit Group. He transferred there from March Field, Calif., where he had been an instructor. He spent his spare time on the nearby "garden isle" of Kauai, where the fishing, boating, and swimming were excellent and where he met the McKeevers. They were *Kamaainas* (pronounced, KAH-mah-EYE-nah)—literally, "old timers of the land."

The future Mrs. Twining had lived all her life in the islands except for a couple of years attending boarding school in San Francisco.

When Twining and Mr. McKeever had finished their talk, he and Maude borrowed the McKeevers' Chrysler to take a turn around the island. Knowing the conversation's subject, she was naturally anxious to hear its outcome, but Twining was strangely non-communicative. Finally, after a considerable lapse of time, he asked, "Do you want to know what he said?" Maude did.

"He advised me not to marry you."

The thought of losing a daughter

ER IS STRICTLY A T KIND OF GUY

Nate Twining has had a lot of commands in thirty-seven years—from a rubber life-raft to the USAF's top Pentagon job

General Twining

rather than stalwart opposition to the betrothal, one suspects, colored "Gampie" (the Twining children's childhood name for "grandpa") McKeever's not-so-serious objections. In any event he committed a grievous tactical error. He cited Maude's avid interest in sports, fishing, canoeing, swimming, horseback riding. And "that," in the words of the Twining's youngest son, Nathan, Jr., "would've sold Dad."

Shortly after Lieutenant Twining and Maude McKeever were married, on March 9, 1932.

When, on that Thursday afternoon in May 1953, Mrs. Twining learned her husband had been made Chief of Staff, she knew what it meant. Since October 1950, when Twining was appointed Vice Chief of Staff, she had glimpsed a little of what the future might hold in store. And, both she and the general could look back on what the past had afforded.

Eighteen years before she learned of another promotion—"the biggest and most exciting, even including the latest," the Twinings ever experienced. Then Twining, an assistant operations officer with the Third Wing at Barksdale, La., after seventeen long and lean years was promoted from lieutenant to captain.

They were seventeen years of moving from post to post—including five moves in three years, 1932-1935, while "two new Twinings made their arrival"—instructing, training, and gaining experience for the larger jobs to come. They were years when the penny-poor Air Corps was a "country cousin" in the Army's family of services. But they were years when leaders like "Hap" Arnold and

(Continued on page 31)

THE PRESIDENT
OF
THE UNITED STATES OF AMERICA

To all who shall see these presents greeting:

Know Ye, that reposing special trust and confidence in the patriotism, valor, fidelity and abilities of

Nathan Farragut Twining, 10A

I do appoint him

Chief of Staff, United States Air Force

effective from the 30th day of June, nineteen hundred and fifty-three. This Officer will therefore carefully and diligently discharge the duties of the office to which appointed by doing and performing all manner of things thereunto belonging.

And I do strictly charge and require those Officers and other personnel of lesser rank to render such obedience as is due an officer of this grade and position. And this Officer is to observe and follow such orders and directions from time to time, as may be given by me, or the future President of the United States of America, or other Superior Officers acting in accordance with the laws of the United States of America.

This commission is to continue in force during the pleasure of the President of the United States of America, for the time being, under the provisions of those Public Laws relating to Officers of the

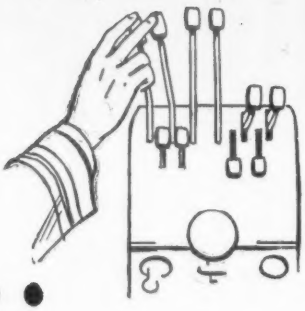
Armed Forces of the United States of America

and the component thereof in which this appointment is made.

Done at the City of Washington, this 30th day of June, in the year of our Lord one thousand nine hundred and fifty-three, and of the Independence of the United States of America the one hundred and seventy-seventh.

General Twining received this commission as Chief of Staff, USAF.

a fingertip flip...



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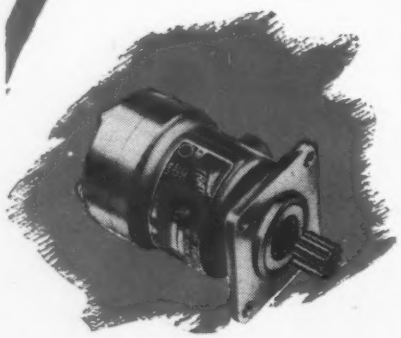

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"Tooey" Spaatz began, as Spaatz says, "to notice up-and-coming youngsters like Van [Gen. Hoyt S. Vandenberg, Twining's predecessor] and Nate."

In July of this year when the Twinings moved from Quarters 12B at Fort Myer to Quarters Eight, they made what may be their last official change of residence in the Air Force. This time, however, more than just their household furnishings were affected. This time they were moving downstage center.

The new First Family of the Air Force is a closely knit one, and its members are not likely to lose their individuality though they are now in the spotlight. But General Twining's new and arduous duties mean that a bit of the companionship that formerly existed must of necessity be foregone.

Mrs. Twining, high on any Washington society editor's list of handsome and charming women, knows how much their life will be affected. She recalls that shortly after the general returned from the Pacific after commanding the Twentieth Air Force she realized she was "losing him," figuratively speaking.

This was poignantly illustrated in a conversation with the Twinings' oldest son, Richard, who is a B-50 aircraft commander at Mather AFB, Calif. Dick, an army-brat, nourished no desire to make the military his life's career, still doesn't.

("If I had asked Dick to try for West Point," General Twining says, "he would have. But you can't make your children do what they don't want. Later on you'll both regret it.")

Dick Twining attended the University of North Carolina from 1944 to 1946, spent two years as an enlisted man in the Air Force, and then completed his course—major in psychology—from 1948 to 1950. At the University, Dick was an All-American swimming star and established school records in the 100-yard free-style and 200-yard backstroke. After being graduated as an AF-ROTC student he entered the Air Force and went to pilot training.

After jet training—in fighters—Dick was sent to Mather. During a recent conversation while he was in Washington on temporary duty to attend what the Twinings called the general's "coronation," Dick recalled the only time he and his father had ever flown together. It was at Kelly Field, Tex., when Dick was ten and his father was a major.

("I wasn't worried at all," says Mrs. Twining, "until Operations asked me to sign a waiver absolving the government of responsibility in case of an accident. Then I began to worry.")

"When I graduated from jets," Dick said, "I wanted to take Dad for a ride. But now I can't. I'd be scared."

Nate, Jr., also has passed up the military life as a career. He is studying piano at the Oberlin Conservatory of Music in Ohio. Nevertheless he is taking ROTC and last year, his freshman year, Nate had a little trouble with, as the general said, "his facings—left and right."

Last Mother's Day, as a surprise for Mrs. Twining, Nate made it home to Washington. He'd saved enough of his allowance by doing his own laundry to purchase a plane ticket—one way. ("You'll have to pay my way back, Mother.") He mentioned his difficulty in AF-ROTC drill.

General Twining, no martinet, nevertheless thought a little extra-curricular instruction might help. So Nate, Jr., stood at attention in the Twining's comfortable living room and with Mrs. Twining acting as a "squad" of one, the general drilled his son. Once Nate had definitely conquered his difficulty, he looked at his dad and said incredulously:

"Where did you learn all of that stuff?"

Even the portrait of General Twining that hangs over the fireplace blinked.

On another wall of the Twinings' living room is a portrait by the same artist, Frank Grad, of their daughter and youngest child, Olivia Barbeur or "Oddie" to the family. Chosen as Miss Airpower of 1953 by the Air Force Association, Olivia is entering George Washington University. Last year she attended Stephens College in Columbia, Mo., where she modeled, excelled in millinery design, swam in the college's water ballet. This summer she worked as a model in a Washington department store. Like Nate, she has learned the value of the dollar and augmented her allowance at Stephens by waiting on tables.

General Twining, a West Point graduate, made it the "hard way." His appointment to the Academy wasn't the Congressional or Presidential variety. He won it in a competitive examination while serving as an infantryman in the Oregon National Guard.

That General Twining, who began his military career as a National Guardsman on the Mexican border in 1916 and was graduated as an infantry officer from West Point in 1918, should transfer to the more adventuresome Air Service isn't surprising. Another Twining had preceded him in the aviation field.

It was his father's brother, LaVerne Twining, a university professor in California and a "true pioneer in American aviation," according to the general. Not five years after the Wrights flew at Kitty Hawk, LaVerne Twining built his own plane and launched it off of a barn roof. He crashed and broke a leg. That

(*Continued on following page*)

In 1934 "Hap" Arnold (right) led a flight of B-10s to Alaska. His engineering officer—Lt. Twining (left). A supernumerary, Twining didn't make the mission. But thirteen years later he went to Alaska as CG of the AF there.

was in 1908, fifteen years before his nephew entered primary flying school at Brooks Field, Tex.

The Twinings have been around for a long time. William Twining I (a direct forebear of the general) and his family came to the colonies in 1635, to escape from England and the religious persecutions of the day. Later William Twining, Jr., too, sought refuge from religious intolerance. He and his family, who were persecuted for their practice of the Quaker religion, left Plymouth Colony and moved to Pennsylvania. Later his great-grandson, Samuel, would have two sons disowned by the Friends because they bore arms for the colonies in the Revolutionary War.

Gradually, the family trekked westward, until in 1844 John Twining, the general's great-grandfather, settled in Wisconsin. There, at Monroe, Wis., the general was born on October 11, 1897. By that time his family had dropped their Quaker affiliations, but as Twining recalls, his banker father remained a "very righteous man." He "scowled on the use of the rocking chair and objected to seasoning food with salt and pepper."

Like their Revolutionary forebears, the Twinings continued to contribute their quota to the nation's armed forces. Twining's grandfather, Nathan Crook Twining, a Ph.D. and college mathematics professor, recruited and captained his own company in the Civil War—the 40th Regiment Wisconsin Volunteer Infantry. In Twining's words, "He was a damn good soldier." Two of Nathan Crook Twining's brothers were killed in that war. Of his three sons one was Nathan C., Jr., a rear admiral in the United States Navy who served as Chief of Staff to Admiral Sims during World War I. Another was Clarence Walter, father of the present Chief of Staff.

If any two traits are dominant in the general's personality they are independence of spirit and love of active adventure. Not the passive sort that one derives from reading a book, but the participating variety wherein one discovers a little more of oneself. The general is as much at home in the woods as he is in the cockpit. One of the mementos of his days in the Alaskan Department is the hide of "Rusty," a huge Kodiak bear that Twining felled. The bear was only a few ounces less than the largest ever killed.

As a young officer, the general played football and baseball and coached post teams. Now his main participating sport is golf. As spectators, both he and Mrs. Twining like baseball and football. Mrs. Twining, the general will admit, can score a baseball game as well as any sportswriter. They're both staunch Washington Senators fans, with the general having a collateral interest in the St. Louis Cardinals.

Twining, in the vernacular of newsmen who cover the Pentagon, "is a difficult man to profile." His self-effacing modesty and "balanced calmness" are just not productive of what reporters call "hot copy." Recently office intimates of Twining were called upon to recount humorous or embarrassing anecdotes involving the "boss."

"Gosh," one replied, "the boss just doesn't get into embarrassing predicaments."

Twining's consideration for others, especially his office staff, creates a deep-rooted loyalty and allegiance. As one said:

"Oh, he can use the cavalryman's language, but never on or at anyone. It's very seldom that he 'blows his stack.' I've probably seen him when he was mad, and didn't know it myself."

His consideration is not only official but social. While he was Commanding General of the Air Materiel Command at Wright AFB, Ohio, and just before his departure to take command of the Alaskan Department – the general was approached by a sweet young thing at a social affair. Having heard of his prowess with a rifle and knowing he was off to northern climes, she sweetly asked Twining to "please shoot her a parka while he was in Alaska."

The general mentally winced and then promised to do so. A certain way to gain an adherent and forestall a maidenly blush.

In talking with the general in his large, beige-colored office on the fourth floor of the Pentagon, one is immediately struck with this consideration for others and by his reticence to talk of himself. He will get expansive while discussing the Air Force and its needs, sports, and of course, his family, but refrains, almost in a deprecating manner, to talk of himself.

During World War II, General Twining, who commanded more Air Forces—Thirteenth, Fifteenth, and the Twentieth—than any other general, flew missions with every one of his

(Continued on page 34)

NEW JOINT CHIEFS

General Twining takes his place with the other new members of the JCS

THIS summer at Quantico, Va., Leathernecks glimpsed more stars than they are accustomed to seeing on that sprawling Marine Corps base. Thirty-two of the stars were on the four pairs of shoulders belonging to the new members of the Joint Chiefs of Staff.

The Quantico "outing" was at the suggestion and invitation of Secretary of Defense Charles E. Wilson, and was designed to better acquaint the new members with one another before they embarked on their new tours of duty. Besides the USAF's Twining (see above) they are:

Chairman of the Joint Chiefs, Adm. Arthur W. Radford (56). A flying admiral and carrier warfare expert, Admiral Radford is close officially and personally to Secretary Wilson. His outspoken viewpoints (often critical of Air Force policies) will loom large in the Joint Chiefs' deliberations.

Army Chief of Staff, Gen. Matthew B. Ridgway (58). Successively succeeded two five-star generals—MacArthur (Far East) and Eisenhower (Europe)—before present appointment. His "Operation Killer" offensive ("I'm not interested in real estate") in Korea, 1951, revitalized a severely shaken Eighth Army, helped pave way for truce talks.

Chief of Naval Operations, Adm. Robert B. Carney (58). Unlike Admiral Radford, he's no aviator, but as a "blackshoe" admiral he is one of the Navy's best. In World War II he was Adm. "Bull" Halsey's Chief of Staff.

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GENERAL TWINING—CONTINUED

commands. But he refuses to call them combat missions, insists he just "slipped away," circumventing directives barring Air Force commanders from flying with their men over enemy territory. He flew as an observer, he maintains. If, he explains, he'd piloted the plane, navigated to target, or toggled the bombs, it might be different. The guys who had to fly those missions, he says, would have reason to resent him, "an old fogy," going along and taking credit for a combat mission. Little wonder GIs called him "their general."

General Twining's World War II commands varied in size in each theater. In the Southwest Pacific, however, Twining assumed a command that must have made him wonder why he had chosen West Point over Annapolis. (General Twining's older and younger brothers, Robert B., a major general, Marine Corps, and Merrill B., a retired Navy captain respectively, both attended the Naval Academy.) It was in January of 1943, and Twining was commanding general of the Thirteenth Air Force with headquarters at Espiritu Santo, in the New Hebrides, about six hundred miles southeast of Henderson Field on Guadalcanal.

Twining, a brigadier general, had gone to the South Pacific in July of 1942 to command the Army Air Forces in the Southwest Pacific Area under Maj. Gen. Millard Harmon.

Twining, with fourteen others, boarded a B-17 at Henderson Field on the afternoon of January 26. Their destination—Twining's headquarters on Espiritu. Enroute they ran into one of those "fronts" that plagued the pilots of Twining's Jungle Air Force. They ran out of gas and, with no way to get into Espiritu, decided to ditch. A night-time ditching on a storm-angered sea isn't the most pleasant thing in the world but it was infinitely better than bailing out singly. Before ditching, Twining tied his briefcase, filled with secret documents, securely to a .50-caliber machine gun and tossed it into the night and the Pacific, so it couldn't fall into the hands of the Japanese.

The pilot, Capt. J. W. Woodruff, landed skillfully, all clambered out of the sinking Fortress into two rubber liferafts. Their provisions were a five-cent can of sardines, a chocolate bar, and two canteens of water. They didn't even have a radio, as their plane carried no Gibson Girl, due to the dire shortage of equipment in that theater of war. After ditching, Twining became commanding officer—probably the smallest and wettest command of his career.

"We didn't," one survivor, Maj. Craig Seasholes, recounts in his brief account of the ordeal in *Adrift in*

For six days General Twining and fourteen crew members of a B-17 drifted in an open liferaft in the South Pacific. Here the weary, bearded, and bedraggled one-star general is carried ashore from the PBY that saved them.

the South Pacific, "have a mimeograph machine aboard to publish the order, and General Twining never bothered to make public announcement that he had assumed command. He led without benefit of band or ceremony, for his leadership was a natural leadership."

It looked, even to General Twining, "pretty hopeless." They had practically no food or water, and the stormy weather prevented a thorough sea search.

Even the Air Force wasn't too optimistic, Mrs. Twining recalls. She was living in Charlotte, N. C., her home throughout the war. Ordinarily next of kin were not notified of planes downed in the ocean until after a thorough sea search, or, if notified, it meant there was little hope of rescue. Mrs. Twining was notified only a couple of days after the general disappeared.

For six days the survivors bobbed over the waves before a B-17 finally sighted them. Already abandonment of the search had been discussed. A nearby Navy PBY was radioed and it came to pick up the sunburned, thirsty, hungry survivors. Their only sustenance had been two albatrosses, one of them shot out of the sky by General Twining with a .45 automatic. Twining's brother, then Capt. Edward Twining, now a lawyer in Portland, Ore., and onetime prosecuting attorney there, left his sickbed in Hawaii to aid in the search. He was on the plane that sighted the general.

"The greatest sight of my life," says Twining, "was when that B-17 dipped its wing."

That fall, General Twining left the Pacific theater for Europe where he took over the 15th AF in Italy. In January 1945, he was named commander of the Mediterranean Allied Strategic Air Forces. That July he returned to the States only to be sent again to the Pacific, to command the 20th AF. There he participated in the briefing and debriefing of the crews that dropped the atomic bombs on Hiroshima and Nagasaki.

When he returned from the Pacific in October 1945, he was assigned briefly to the Continental Air Force headquarters, Bolling AFB, and from there to Wright Field and AMC. In October 1947, he was named commander-in-chief of the Alaskan Command. In May 1950, he returned again to Washington, D. C., as Deputy Chief of Staff for Personnel and in October of that year was named Vice Chief of Staff, where he gained his fourth star. Three years later he became the third Chief of Staff of the United States Air Force.—END

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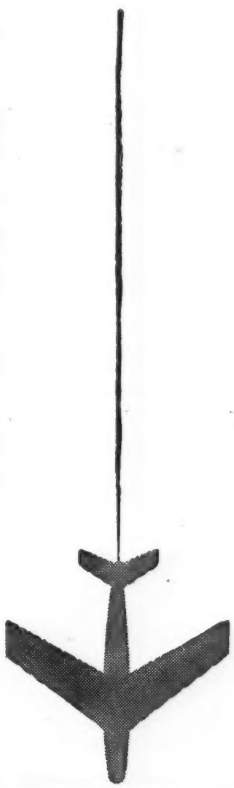

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The Allison Division of General Motors is making regular flights in its Turbo-Liner. Between Chicago and Indianapolis the Convair 240, with turbo props, saves 16 percent in travel time and 25 percent in fuel costs compared to present day airliners.

* * *

Commercial aviation is growing more than ever before—more corn, cotton, soybeans, hay, and wheat. According to the Civil Aeronautics Administration, there are 434 airports in the United States that use every inch of available space for agriculture. At some airports the hay and beans are the principal

source of revenue, and many an airport keeps itself out of the red with a good crop of alfalfa.

* * *

There are now 5,383 business concerns operating their own planes to save time for traveling executives and to improve service to customers. The executive fleet includes 11,000 aircraft, and last year the business brass flew 422 million miles. That was only 35 million fewer miles than the domestic scheduled airlines flew during the same period.

* * *

Alaska has more aircraft per capita than any of the forty-eight states.

* * *

Last year the world's airlines carried 45 million passengers, about twice as many as in 1948. The planes that hung up this travel record flew more than a billion miles during the year.

* * *

US airlines in 1952 spent $22 million to feed their passengers. Only seven times that amount was required to satisfy the airplanes' appetite for gasoline and oil.

* * *

Down in Texas a helicopter has suffered the shame of being arrested—by a highway patrolman. The culprit had dropped into a corner gas station to fill up when his fuel

ran low, and the ticket was issued when he made the error of taking off again into a string of telephone wires.

* * *

The DC-7, soon to be seen on the scheduled air routes, is the fastest (410 mph) of the piston-powered airliners.

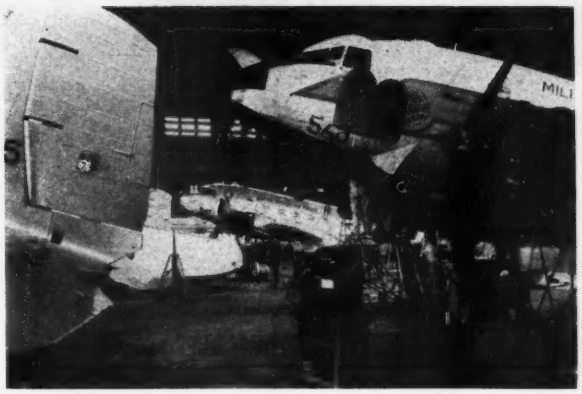
* * *

Pan American can fly 3,300 pounds of outboard motors from Canada to Venezuela for $900 in one week. By sea it costs $1,000 and takes one month.

* * *

In the fifty years of US aviation history, American manufacturers have produced an average of twenty-six planes every day.

By Wilfred Owen



AERODEX INC. SUCCESSFUL IN HELPING AIR FORCE PROVE NEW MAINTENANCE CONCEPT

AERODEX INC. has developed a new system of overhaul on "production line" that is now giving the US Air Force a plane a day and four times as much for their money. AERODEX has been turning out these aircraft to specifications of the Air Force for almost two years.

The first of this year the Air Force called upon AERODEX to try a new concept in aircraft maintenance (IRAN).

After the first four months AERODEX announces more great savings to the Air Force.

Through the use of a new approach with "production line" methods, AERODEX has reduced overhaul average man hours over 2,000 hours per aircraft.

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First military pilot Lahm and first jet ace Jim Jabara.

Lack of Vision—Then and Now

The old timers had their difficulties when it came to selling airpower to an indifferent and skeptical nation

By Brig. Gen. Frank P. Lahm (Ret.)

Born in Mansfield, Ohio, in 1877, Frank Lahm began his military career in 1901 as a cavalry second lieutenant. On September 9, 1908, he became the first army officer to fly, as passenger with Orville Wright at Fort Myer, Va. In 1909 at College Park, Md., Wilbur Wright taught him to fly. Three hours of dual instruction made Lahm the world's first military pilot. He was retired in 1941. Believing his ideas would be pertinent in this fiftieth anniversary year, we asked Gen. Lahm to write this for us.—The Editors.

YOU have asked me to give my impressions of the significance of fifty years of powered flight as seen by an old timer, emphasizing the difficulties we encountered when our powerful Air Force of today was in swaddling clothes.

We had our difficulties, plenty of them. Our planes were crude; their performance was unbelievably limited according to present standards. But that did not worry us. We knew it was only a beginning, that a vast field would open up in the future and that the day would come when airpower would win its rightful place in our national defense.

The greatest obstacle to the development of aviation these past fifty years has been lack of vision. We have had our skeptics, our doubting Thomases, and too few General Mitchells, Severskys, men who could look into the future and visualize the possibilities opened up to mankind when the Wright Brothers conquered the air a half century ago. I recall the time when a bill was introduced in Congress providing for the purchase of airplanes. A member arose to object; he understood that we already had an airplane.

Among the parables in the Bible you will find these words: "Where there is not vision, the people perish." I think it is pertinent to quote the remarkable prophesy of Alfred Tennyson, the great poet-laureate of England. More than 120 years ago he saw farther and more clearly than his contemporaries, the future of aviation and its possibilities in promoting a happy and peaceful world.

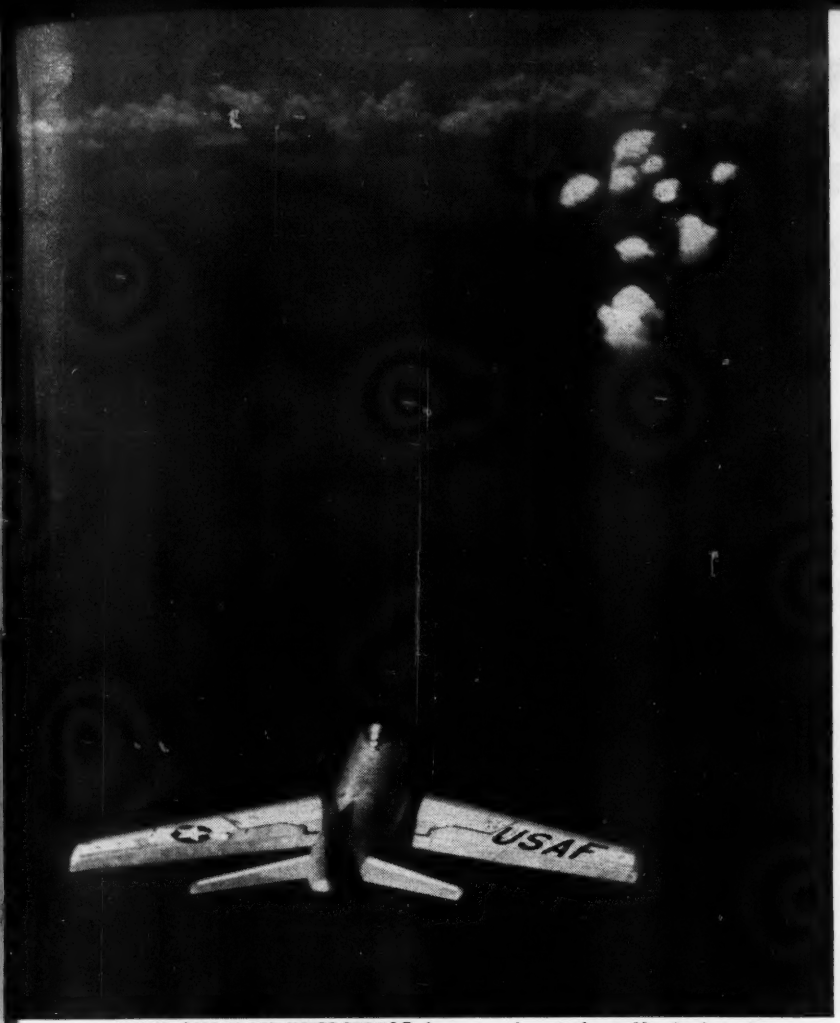
"I dip't into the future, far as human eye could see,
Saw the vision of the world and all the wonders that would be,
Saw the heavens fill with commerce, argosies of magic sails,
Pilots of the purple twilight, dropping down with costly bales;
Heard the heavens fill with shouting, and there rain'd a ghastly dew
From the nations airy navies grappling in the central blue;
Till the war-drums throbbed no longer, and the battle-flags were furl'd
In the Parliament of man, the Federation of the world.

We live in a world ruled by force. We do not like to admit it, but it is a fact. We abhor war; we would prefer to settle our difficulties by peaceful means. But when diplomacy fails, as it sometimes does, the problem is handed over to the military and becomes their responsibility. In addressing the graduation class at West Point some years ago, General Eisenhower characterized war as "man's most tragic and stupid folly" and added "anyone guilty of starting a war of *aggression*, is guilty of a black crime against mankind." More recently he expressed the opinion that "unless we have a moral regeneration, we are sunk." Another great soldier, Gen. Douglas MacArthur, tells us that the question of war or peace is a "theological" one. True to his belief, when he took over in Japan in 1945 at the end of World War II he asked for 2,000 missionaries. He was given 124.

Paraphrased, what these two military men tell us is that until we raise the moral standard to the required level, we shall continue to have wars, and history records that war is practically continuous, peace the exception. There is but one conclusion while we strive earnestly to raise our moral standards and look forward to the time when wars will cease, until that time comes we are compelled to "keep our powder dry."

We old timers see airplanes flying faster than sound, a world covered with a network of prepared airways, our great air terminals, our millions of air passengers. We see the "heavens filled with commerce, pilots dropping down with costly bales," airplanes in combat six miles and more above the earth, bombers dropping powerful explosives from those heights at targets that they cannot see but can hit thanks to the wonderful phenomenon of radar; "a ghastly dew rained by airy navies grappling in the central blue." Let us look forward hopefully to the time when "our battleflags will be furl'd."

Let me remind the young Air Force officer of today that you are fortunate in being equipped with the best airplanes in the world. We trust that means will not be lacking to continue essential technical research that will keep us in the forefront. Have faith in your weapon, in your training—you are the best military pilots in the world as you have repeatedly proved in this grim business of war. To you has been confided the best powder we have. Keep it dry.—END



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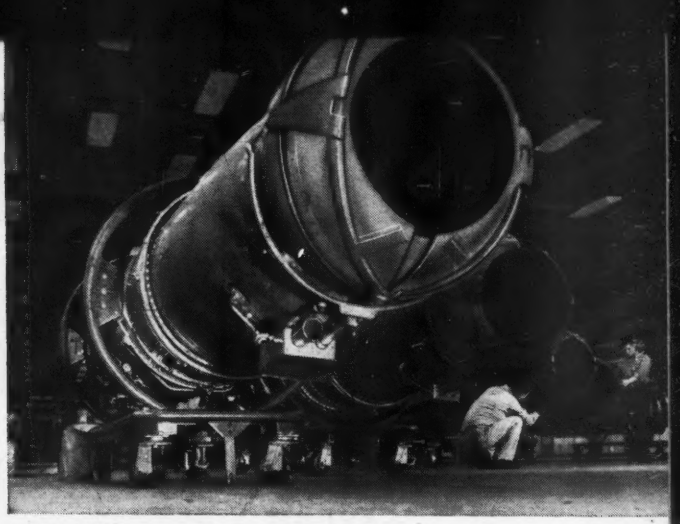
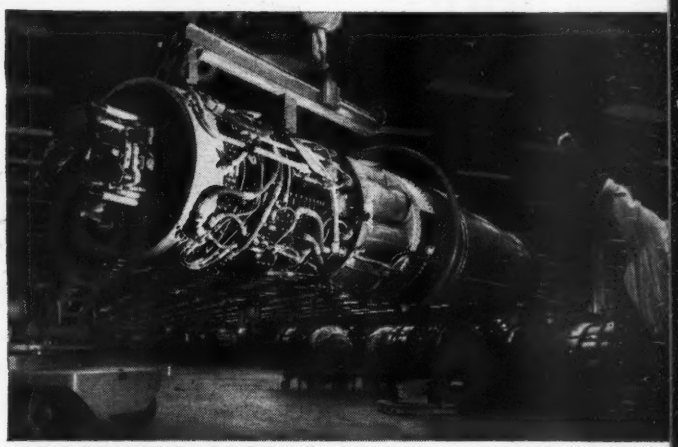


AUTOMATIC CONTROL of the variable area nozzle (illustrated above) regulates exhaust velocity and temperature.



MOST POWERFUL of J47 family, afterburner version gives F-86D Sabre Jet extra power to climb quickly for interception.

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Electronic "Brain" Permits Complete Engine Control with Single Lever

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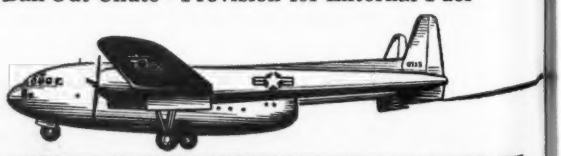

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ANNIVERSARY

ONCE A YEAR, in our September issue, we pause to pay a special tribute to the men and women of the United States Air Force. We pick this particular month because on September 18, 1947, only six short years ago, the Air Force officially came into being as an autonomous military arm—part of the newly created Department of Defense.

We celebrate another anniversary, too, at this time—the seventh year of existence of Air Force Association, the civilian organization dedicated to the twin causes of American airpower and world peace.

This year still another anniversary observance is included in this special issue, for 1953 marks the fiftieth year since two bicycle mechanics from Dayton, Ohio, proved to the world their own stubborn conviction that man could conquer the air, that a man-made, man-carrying machine was capable of sustained, directed, powered flight.

Like the Wrights, the men and women who have devoted their talents, and in many cases have given their lives, in the furtherance of American airpower as an instrument to obtain and maintain the peace of the world have encountered lack of vision and a plain reluctance to understand the implications of this still-new instrument. Much has been done but the extent of the job yet to be accomplished may perhaps best be ascertained by turning the page and reading of "The Great Debate."

THE GREAT DEBATE

A loss or gain of Air Force budget money is not as important as understanding what war in three dimensions means

By James H. Straubel

Editor, AIR FORCE Magazine

FRANK LAHM, who learned his flying from Orville Wright, recalls that a Congressman once opposed the purchase of military aircraft with the argument that the nation already had an airplane.

In the first session of the 83d Congress, recently adjourned, no one topped that one, but there were several good trys, and a few close decisions.

The incredible dialogue of the Great Airpower Debate on Capitol Hill supported, in the best tradition of the theater, the incredible plot of the drama itself.

A year before in the Senate—which holds the key to defense appropriations—the question of whether the Air Force would be permitted to build toward 143-wing strength hinged on a proposal to add $600,000,000 to the appropriation for aircraft procurement. When they called the roll, everyone on hand—Republicans and Democrats alike—approved the additional money. The vote was seventy-nine to nothing.

Twelve months later the Senate voted for the withdrawal of some $5 billion from this same Air Force program and, in so doing, rejected the 143-wing schedule.

The Congressional decision of a year before had come after sweeping investigations of Air Force activities by committees of both the House and Senate. Shocking evidence of Air Force waste had been uncovered. Yet, even the Democratic leaders in Congress had openly opposed the airpower stretchout advanced by the Democratic Administration. Republican leaders, of course, decried the anti-airpower aspects of the Democratic budget. The nation's press was vigorous in its opposition to the Air Force stretchout.

This year there were no comparable investigations of the Air Force, and few headlines on Air Force waste. Democratic leaders now opposed the Republican stretchout of the Democratic stretchout of airpower, but the vote in Congress on the defense bill followed the party line rather closely, with a few Democrats joining the Republican majority. The press was no longer vigorous in its support of airpower, and even the aviation trade press, for the most part, was missing in action when the chips were down.

A year before, the Congressional decision had been influenced to a great degree by the findings of a subcommittee of the Senate Armed Services Committee. This group probed deeply into the airpower problem and issued some reports which were highly critical of the Air Force. At the same time, it upheld by the unanimous vote of its members—Republicans and Democrats alike—the unanimous opinion of the Joint Chiefs of Staff that the Russian airpower threat demanded an Air Force build-up to 143-wing strength "not later than December 31, 1954, with June 30, 1954, as the preferable date."

This year, when Congress stood up to be counted, the opinions of the old Joint Chiefs of Staff—now replaced by a new Joint Chiefs of Staff—were placed in disrepute by the Defense Department and the Administration leadership in Congress.

Gen. Omar Bradley, Chairman of the Joint Chiefs, to whom both parties had listened with respect in past years, was outspoken in his opposition to the reductions in the Air Force program. While the Great

(Continued on page 48)

"You Explain It to Me, Mr. Secretary"

LESS AIRPOWER IS REALLY MORE — OR — YOU NEVER HAD IT SO MUCH
C.E. WILSON
SEN. MARGARET SMITH
HERBLOCK
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Herblock in The Washington Post

"Wanna Borrow My Sickle?"

Cartoon comment on the Air Force slash found some unusual editorial bedfellows. Herblock, of the liberal Washington Post, pitched it in terms of Sen. Margaret Chase Smith's astute search for specific information (above). Carl Hubenthal of Hearst's staunchly conservative Los Angeles Examiner took an equally dim view in a broader vein (right).

Carl Hubenthal in The Los Angeles Examiner

Debate was raging he said:

"I know of no intelligence which reveals any change of attitude on the part of the Soviet Union or which would give us any reason to diminish, slow down, or stretch-out our preparedness effort."

Sen. Stuart Symington (D-Mo.) argued long and loud on the Senate floor that General Bradley's detailed report on the Russian threat—given to a Senate committee behind closed doors—contradicted Defense Secretary Charles E. Wilson's more optimistic estimate of the situation, and urged that the matter be resolved before Congress made up its mind on the defense budget. The contradiction has yet to be resolved. Incredibly, only a few Congressmen seemed concerned about it.

A year before, the opinion of the Joint Chiefs of Staff had meant something to Congress. At that time Sen. Homer Ferguson (R-Mich.) had told a Senate committee that it was "the Joint Chiefs of Staff who are responsible, after all, for the military defense," and had insisted they should have been consulted on any reduction in the Air Force budget.

This year, according to the testimony of defense leaders, the Joint Chiefs had not been consulted on the military budget, which, of course, determines the military defense. Senator Ferguson, now Chairman of the Senate Appropriations Committee and the Republican floor leader in the budget debate, argued that the Joint Chiefs were merely advisors and that it had been quite proper to bypass them. "The final responsibility for the budget," he said, "necessarily rests upon the civilians involved," a quite obvious conclusion.

However, when these civilians were Democrats, as they were in 1952, Senator Ferguson had found the Joint Chiefs responsible for the nation's defense.

Twelve months later, when the "civilians involved" were Republicans, the Senator had eliminated the Joint Chiefs from this responsibility. Such was the nature of the airpower debate and the airpower decision on Capitol Hill.

Michigan's Sen. Homer Ferguson, here flanked by Defense Sec'y Charles E. Wilson (left) and Roger Kyes, his deputy, pushed the defense budget through the Senate.

As late as March of this year the Joint Chiefs of Staff had reported to the Secretary of Defense that "any reduction of the program of 143 wings to be attained as soon as practicable after fiscal year 1954 would increase the risk to national security 'beyond the dictates of national prudence.'"

If this had any effect on the new reasoning of Senator Ferguson, it apparently did not disturb Rep. Errett Scrivner (R-Kan.) who served as House floor leader for the defense bill. Said Representative Scrivner during the House debate: "I do not have any fear of invasion of this country. I have confidence in our strength, in our military might, in our air defense. . . ."

About the time these words were offered to history,

portions of the Kelly Report were published, representing the findings of a group of eminent scientists. It expressed the grim warning that "the Soviet Union is militarily capable today of a surprise attack on the United States which could cause large loss of life and major property damage and possibly temporarily lessen the capability of the US to support a major war effort."

A year before the Kelly Report undoubtedly would have been quoted and requoted on the floor of Congress. It was barely mentioned in the Great Debate of 1953.

The defense budget was approached primarily from the standpoint of fiscal policy. A balanced national budget (although not achieved) apparently became more significant than a national defense program, balanced against the strategic requirement. That the new budget would push this program even further off balance seemed all too evident in that it permitted both the Army and the Navy to continue their programmed force levels while it chopped twenty-three wings off the end strength goal of the Air Force program. However, before the debate was over, confusion reigned supreme over "interim goals" and "paper wings" and dozens of other phrases designed to suggest that we could get more combat strength by buying less of it. Public, press, and legislators alike became weak and numb by the barrage of dollar-signs. The brain-washing job was virtually complete.

The confusion had begun in the heated budget hearings of the Senate Appropriations Committee which preceded the Congressional debate. General Vandenberg's much discussed statement opposing the airpower cutback prompted a well organized campaign to discredit both the General and the Air Force.

It is always much easier to criticize the airpower story than explain it. The meshing of men, materials, planes, and bases is an intricate undertaking. Its comprehension requires patience and thoughtfulness on the part of the investigator. Neither was forthcoming from men who saw in the expensive Air Force program their only real hope to approach a balanced national budget.

One Senator spent a half hour questioning General Vandenberg on the number of planes needed to destroy a given target, assuming that "you are already over the target and you have escaped all the hazards of coming in." No amount of explanation served to convince him that to get one or two atomic bombs on target might require a group of planes for various types of diversionary and protective missions. The Senator kept repeating one question: "Assume you are *over* the target; now how many planes do you need?"

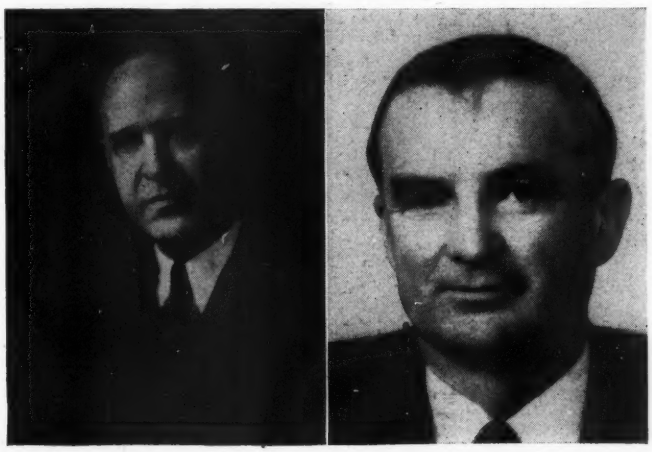
In the midst of this sort of repartee, Sen. Margaret Chase Smith (R-Me.) interrupted the proceedings to state, in effect, that she thought the committee had proceeded far enough without knowing exactly what it was talking about. Specifically, she asked for definitions which would distinguish between allocation, apportionment, appropriation, contract authorization, obligation, obligational authority, commitment, and expenditure; between combat support units and combat units, administrative lead time and reorder lead time.

Another Senator, asked for his comment on the airpower testimony, limited his remarks to two words. "I'm confused," he said.

As the Great Debate progressed from committee rooms to the floor of Congress, and to radio and television programs, it appeared that the confusion was not always what it seemed.

For example, the question "What is a wing?" was asked over and over again, as if the answer were a deep, dark mystery (see page 51). The reason became apparent when it was argued, believe it or not, that even the Joint Chiefs couldn't fathom the answer. As one Senator charged in a floor speech: "The Joint Chiefs did not specify what should constitute a wing. They did not approve the number of aircraft that must be in any given kind of wing. They did not specify what kinds of planes the Air Force would have in these wings."

This was offered to prove that the 143-wing program recommended by the Joint Chiefs had little



Sen. Lister Hill **Sen. Stuart Symington**

meaning, and could be scrapped without weakening the strength of the Air Force. Actually, the Joint Chiefs always have had exact knowledge of the strength of Air Force wings of various types.

The "paper wing" argument also became a television favorite. It grew out of the discovery, which took little detective work, that a wing is carried as "activated" before it has its full equipment or personnel. The Air Force listed 106 "activated" wings, two of them with no planes at all. This, it was implied, was a scandal of some sort or other.

Congressional strategists quickly concluded that wings should spring full-grown between one day and the next, failing to note that a great amount of waste would result if first-line combat aircraft were placed in a unit which had neither the men nor the facilities to operate them. A wing, of course, must grow—first the nucleus of a staff to direct its growth and training, then a base, quarters, more personnel, aircraft, supplies, equipment, more aircraft, etc., until it is finally a complete unit. To treat a half-grown wing as a scandal is as sensible as criticizing the human race for the necessity of experiencing babyhood and adolescence.

(Continued on following page)

One Senator, attacking the "paper wing" myth, claimed: "Instead of being thirty-seven wings short of our magical 143, we are, in fact, forty-nine wings short in aircraft. . . ." While an incorrect statement, it might well have inspired a redoubling of effort to bring more aircraft into the Air Force picture as quickly as possible. Yet, the same Senator argued in another breath that the tempo of the Air Force build-up should be slowed down.

"It is my understanding," said this Senator, "that all America would be shocked if it were really known just how few of these ninety-four wings are as much as two-thirds equipped with modern airplanes."

That a "shocking" condition exists which cannot be revealed for security reasons is hardly in keeping with the facts. At present, the Air Force has seventy-seven wings equipped with modern aircraft. Nor has there been any mystery in the delay of aircraft deliveries. The reasons for the delay have been well publicized. Further, the delivery rate has been relatively rapid in recent months. All of which meant little as the Great Debate continued. More important, however, if Congress was concerned over the combat-readiness factor of our Air Force, it should have inspired them to step-up rather than slow-down the Air Force build-up.

Harris & Ewing

Sen. Margaret Smith **Rep. Errett Scrivner**

Charges against the Air Force were fired with abandon. Said one Congressman: "They have 59,000 military police in the Air Force as against 20,000 in the Army." True enough, but the implication of waste is false. The need for military police is not based upon numbers of men in the service but upon the quantity and dispersion of bases and sensitive equipment. The Air Force, by the nature of its mission, has more overseas bases than both other services combined. For sound tactical reasons its aircraft, loaded with secret equipment, are dispersed over wide areas, thus complicating the policing problem.

It was charged that the Air Force was "fat" in bands and public relations personnel, without the explanation that the Army had 129 bands, the Air Force ninety-six bands, and the Navy sixty-seven bands. Nor was it explained by the accusers that the 1954 budget provides for 406 people in Army public relations activities against 270 in the Navy and 231 in the Air Force. Facts such as these might at least have placed the criticism in perspective, whether or not the Air Force should curtail its band and public relations activities.

There were instances during the Great Debate of downright misstatements of fact regarding the Air Force, each given a promotional touch to help justify the cutback.

It was charged on the House floor, for example, that twenty-seven different bombsights were being developed in the Air Force. Said a Congressman during a decisive stage of the Debate, "They were developing twenty-seven bombsights, and, as you say, it is a spawning, a sprawling, a mushrooming growth; they build up little empires." Yet the record showed that the Air Force had exactly five bombsights under development. As Sen. Lister Hill (D-Ala.) commented on the charge, "Not twenty-seven, but only five—an error of more than 500 percent."

The sum total of the Great Debate was not only to cut back or stretch-out the Air Force, as you will, but also to discredit this branch of the service, undermine the morale of its people, and compromise public confidence in the airpower concept.

Only a small band of legislators spoke out to clarify the facts regarding the Air Force and fight for a better understanding of the airpower problem. In the House, several of these spokesmen were men who had served in the Air Force. In the Senate, where there are six Air Force veterans, all six approved the $5 billion reduction in the Air Force Program. All six voted specifically for the elimination of 200 B-47s from the program, and for reducing the pilot training quota sought by the Air Force.

In the Great Debate not one of these six Senators with Air Force service took steps to refute unjustified charges against the Air Force or to correct clear misstatements of fact damaging to the Air Force.

No military service can properly expect its veterans blindly to support a service interest. But any Congressman with military experience has a certain amount of specialized knowledge of his service which should be passed on to his colleagues in the course of Congressional debates and hearings. This nation can be secure only if national policies are wisely decided on the basis of all accurate information that is available.

In the long run, a loss or gain of $5 billion in the Air Force program may not be as significant as full understanding of the many complexities in preparing for and waging war in the third dimension. It can only be hoped that the damage done to national airpower during the defense budget debate this year may not be as great as now would appear. Certainly, the debate and its consequences reveal the long road ahead in achieving a true understanding of airpower, and the continued need for education to enhance that understanding.—END

What's in a Wing?

Combat wing is the trade name for a package of firepower on AF's shelf of capabilities

PROBABLY the least understood military word in public print today is an overworked four letter job spelled W-I-N-G.

To some Congressmen an Air Force wing is a plush military organization with a handful of planes and a vast number of career guidance specialists, recreation specialists, and personal affairs specialists.

To the layman, a wing is what is attached to the fuselage of a plane and has something to do with lift.

To the Air Force a wing is a measurement of the basic striking power of the nation's newest service, more or less comparable to an Army division or a number of Navy capital ships.

In one of his many trips to Congress to justify Air Force requests for funds, former AF Chief of Staff Gen. Hoyt S. Vandenberg explained it this way:

"When the Navy talks about combatant ships, they do not talk about the sea train which follows it, and the Army does not talk about the corps artillery it has to have, and the supply and quartermaster. Therefore, we wanted to get the Air Force on a comparable basis of combat units as a sign of what we have for a striking force, which is in consonance with what the Army and the Navy did."

The major pulling seven G's in a sleek experimental jet over Muroc, Calif., the captain flying an Air Rescue helicopter on a mercy mission, and the staff sergeant sending weather reports from an isolated hunk of floating ice near the North Pole all have one thing in common. None of them belongs to a wing within the present 120-wing program.

That is what General Vandenberg meant when he compared the combat wing to an Army division or Navy capital ships. The three men mentioned above are included in the back-up of the combat wing program. They do not drop the napalm, strafe the enemy troops, or lay a 10,000-lb. bomb in an industrial complex. Technically there is no basis for comparison between a wing numbering 1,500 to 3,500 men, a combat division ranging from 15,000 to 18,000 men, and cruisers or battle ships carrying from 1,000 to 3,000 people. But when the Army speaks of firepower they mean roughly twenty combat divisions, much less than half their total personnel. Similarly, a Navy task force is a collection of vessels assembled to accomplish a specific task. It relates to firepower and does not include the Seabee trying out ways to build a snow-packed runway in the frozen North, or the seaman first class handing out sea bags at Anacostia Receiving Station. A combat wing is Air Force firepower.

The 143-wing program, or the interim 120-wing program, refers to the combat wings in Strategic Air Command, Tactical Air Command, and Air Defense Command. There are necessarily many more types of wings in the Air Force, such as test support, training, and depot wings, but—just as there are aircraft within the Air Force that are not in combat wings—they do not add up to

(*Continued on following page*)

DEFINITIONS

FLIGHT—the basic tactical unit in the Air Force, consisting of four or more aircraft in two or more elements.

SQUADRON—a flying unit consisting of two or more flights of aircraft or an administrative unit performing a single basic function, such as a combat squadron or maintenance squadron.

GROUP—a flexible administrative or tactical unit composed of two or more squadrons. The term also applies to combat support and service support units.

WING—basic operational AF unit which is self-sufficient and capable of sustained efficient operation. Number of aircraft varies from seventy-five fighters to thirty heavy bombers.

DIVISION—an air combat organization normally consisting of two or more wings.

AIR FORCE—the numbered Air Force is a flexible organization of varying size. Its wings may be grouped under two or more Air Divisions or directly under the numbered Air Force headquarters. Normally, a numbered Air Force has a single mission; that is, strategic, tactical, or defense.

Air Force planes with normal crew complement.

B-26	3	F-84	1
B-29	11	F-86	1
B-36	16	F-94	2
B-45	4	C-54	3
B-47	3	C-82	5
B-50	11	C-119	5
F-80	1	C-124	7

striking force. Of course, it is obvious that without Air Research and Development Command to develop the weapons, and Air Materiel Command to procure them, and Air Training Command to train the pilots and technicians, the combat wings would never get off the ground.

In academic terms, a combat wing is the basic operational unit which is self-sufficient and capable of sustained, efficient operation. It is a flexible organization adapted by the three major commands to fit their specific missions.

There is no such thing as a typical combat wing. The flexibility of the wing organization is apparent by a look at SAC, TAC, and ADC—the three commands which contain the Air Force's potent firepower. Realizing that varying missions require diverse organization structures, USAF laid down a model setup and allowed the commands to take the best and modify the rest.

Of the three, TAC most closely follows the model organization, with a wing headquarters for planning and policy, a combat group containing the aircraft, and three support groups (maintenance and supply, air base group, and medical group).

SAC, which presently has two wings at most of its air bases, tailored the concept to fit its particular needs. Over the two combat wings is an air division with one air base group performing the housekeeping functions for both wings. The bomb squadrons are directly under the wing headquarters, omitting the combat group headquarters.

ADC—more widely dispersed than SAC, for strategic reasons—normally has one or two fighter squadrons at a base, with support provided by service squadrons. Since ADC's mission is the air defense of the United States, these fighter squadrons normally remain at one station for a considerable period of time. To complicate matters, a large number of interceptor squadrons are tenants at an air base and receive the bulk of their support from the base. An example of this situation is the 95th Fighter-Interceptor Squadron at Andrews AFB, Md., a MATS base.

The mission determines the organization. ADC fighter-interceptor squadrons in the ZI don't need mobility. They require some fixed unit to take care of the base, refuel the aircraft, feed, clothe, house, and pay the men. So ADC cut out the overhead and spread out its firepower.

On the other hand, TAC trains complete fighter-bomber, troop carrier, and light bomb wings for delivery at some future date to an Air Force commander. This commander in France, England, Korea, or North Africa turns over an air base to the wing commander of the former TAC unit, and from then on it's up to the wing commanding officer to run the show. He needs people trained to support the entire wing at a new home. So far as TAC is concerned that unit is off their books and they're riding herd on fresh crews—green cadres that must be welded together for deployment to some other theater.

SAC, with a proven record of mobility, normally rotates its wings for periods up to ninety days at a temporary home. The base they depart from is kept up for the remaining wing and for the return of the deployed wing by air base groups. SAC, as a unit, is as ready to go as a road show on one-night stands.

Disregarding the doctrine, chain of command, and who is responsible for what, a combat wing is easy to understand. It's simply a number of fighters or bombers with enough support to enable them to pack up, fly to an active war theater, load up with bombs or rockets, and hit their assigned targets.

The fellow paying his tax dollar in Iowa or Alabama cannot care less about the structure of a wing. All he cares about—and rightly so—is that each airpower tax dollar is buying its full dollar's worth of concentrated firepower.

In the case of a B-47 wing, he's getting forty-five jet bombers that can get to the target and back more quickly than the taxpayer can get downtown on a Saturday, do his shopping, and return to the farm.

A combat wing is just the trade name for a package of firepower displayed by the Air Force on its shelf of combat capability. Like the neat rows of canned goods in a supermarket, it started a long way from its present location and went through a lot of hands before the label was added and it was put on display, ready to serve.—END

THESE ARE USAF'S COMBAT WINGS

Type	Aircraft	Normal Number of Aircraft	Approximate Personnel
(1) BOMBARDMENT WING (HEAVY)	B-36s	30	3,600
(2) BOMBARDMENT WING (MEDIUM)	B-50s B-29s B-47s	45 (plus tanker squadron of 20 KB-29s or KC-97s)	3,000 to 3,300
(3) BOMBARDMENT WING (LIGHT)	B-45s B-26s	48	1,500 to 1,800
(4) FIGHTER-BOMBER WING	F-80s F-84s F-86s	75	1,400
(5) STRATEGIC RECONNAISSANCE WING (HEAVY)	RB-36s	30	4,000
(6) STRATEGIC RECONNAISSANCE WING (MEDIUM)	RB-50s RB-29s	45	3,900
(7) STRATEGIC RECONNAISSANCE WING (LIGHT)	RB-45s	45	2,900
(8) TACTICAL RECONNAISSANCE WING	RF-51s RF-80s RB-26s	48	1,500
(9) TROOP CARRIER WING (HEAVY)	C-54s C-124s	48	1,500 to 1,700
(10) TROOP CARRIER WING (MEDIUM)	C-82s C-119s	48	1,500

WE CAN HELP THE PROS PLUG OUR DEFENSE GAPS

So says the colorful Chief of the Air Force Division, National Guard Bureau. Yet ANG has 'a long way' to go before it's trained and ready. As in the past, difficulties will be overcome

By Maj. Gen. Earl T. Ricks

A JACKSONVILLE, Fla., real estate broker was closing a sale when his office phone rang. He listened a moment, then flung the phone into its cradle and raced out the door with a plea to his customer to excuse the interruption.

In another part of town a gas station attendant changing a tire got a call, yelled to his partner to take over, and dashed for his car. A vocational training teacher glanced at a hastily delivered note, assigned a student to take charge, and hurried out.

From all over Jacksonville, members of Florida's 159th Fighter-Bomber Squadron, Air National Guard, were responding to an emergency alert.

This was a dry run, but none of the squadron's personnel knew it. It had been sprung without warning. I triggered it myself with a phone call to Florida's Adjutant General from Montgomery, Ala., just as I was taking off for Jacksonville on an inspection visit. When I arrived over Imeson Airport an hour later in an ANG B-26, I was ordered to go around as four fully armed fighters roared down the runway on take-off.

You might think those boys would have been annoyed at being called out that way. Not so. An Air Guardsman knows that he is subject to call anytime on short notice. We need men, but not bad enough to take them without that clear understanding. The ANG is proud that very few requests for deferment or relief from flying turned up within its wings called to active duty early in the Korean war. Discounting real emergencies, there should have been none. You can never be sure when an alert will be real and we'll need every pilot we can get.

In Washington at 3 a.m. on the Sunday morning after the Korean war broke out, a nervous captain in charge of a micro-early warning crew called the ANG squadron commander.

"I'm tracking some bandits on my equipment," he blurted. "It may not be anything, but on the other hand it might."

The squadron commander hung up, checked to make sure the call was genuine, then set his alert plan in motion. Before 5 a.m. he reported in with twenty manned and armed F-84s standing by on the ramp.

Happily, that also was a false alarm but these examples—and I could give you more—prove that the ANG can get planes into the air on short notice.

A lot has been said, pro and con, about our combat capability. The answer, as usual, lies somewhere in between.

Considering the Soviet air strike potential, we'll never be able—on an inactive duty status—to substitute for regular full-time USAF air defense squadrons. For example, with equipment available today we can't maintain an effective all-weather interceptor outfit on a part-time basis. But we *can* augment USAF's air defense strength.

As an American and a parent I want to see all the air defense we can muster. But as a businessman and taxpayer, I'm well aware that we can never afford the kind of air defense that would make it absolutely impossible for an enemy plane to penetrate our borders.

The unhappy compromise is to cover all approaches as well as we can, then in an attack be able to pull together all available defensive strength at the points where the enemy is trying to break through.

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ABOUT THE AUTHOR

General Ricks, who has logged about 16,000 hours in twenty-nine years of flying, gravely lists his alma mater as Parks Air College, Illinois, where he once studied to acquire a transport pilot's license. His formal education ended when he was sixteen, when he went over the hill from a military academy to begin a career of barnstorming. As a private in 1940 he already had more flying hours than many a USAF pilot achieves in a lifetime. Four years later he was a full colonel and deputy commander of ATC's South Pacific Wing. A West Pointer by birth (West Point, Miss., 1908, that is), he was elected mayor of Hot Springs, Ark., after his release from active duty in 1945, became Arkansas' Adjutant General in 1949 and Chief of the NGB's Air Force Division late in 1950.

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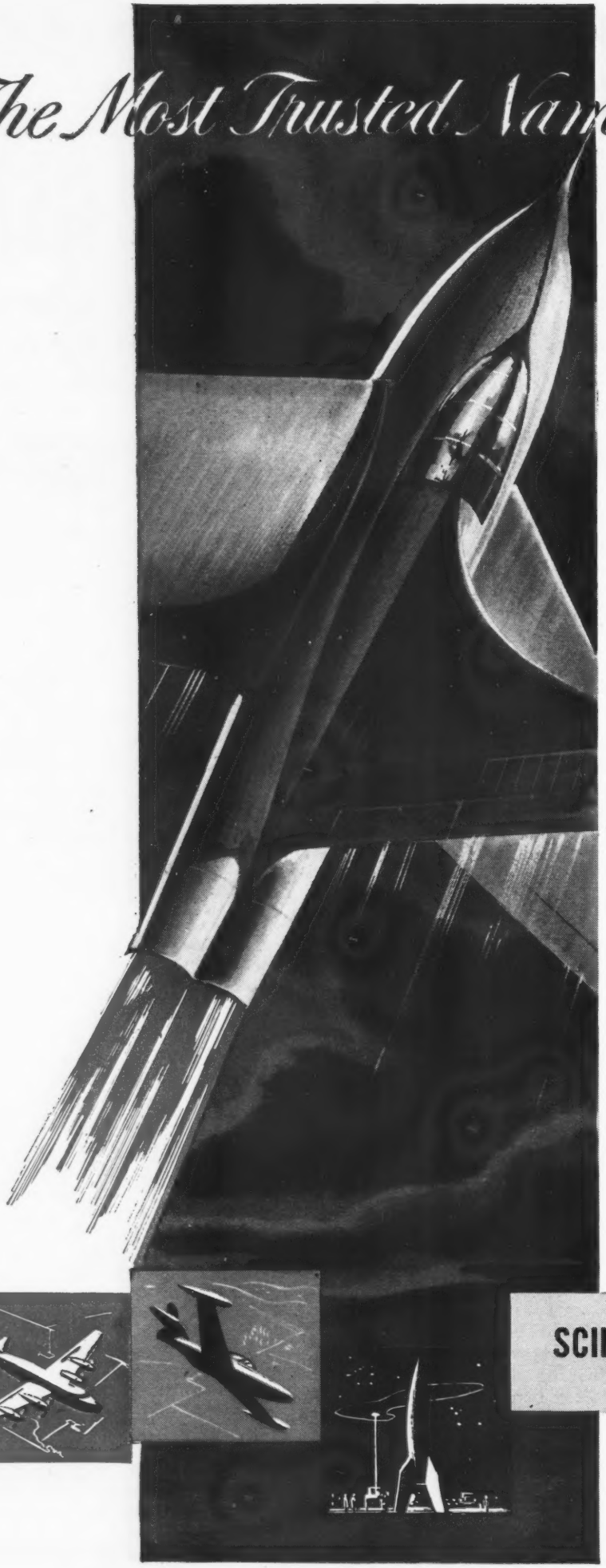

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At present, many of the ANG's planes are obsolescent. Here, for example, two ground crewmen refuel a WW II P-51. The Guard hopes for jets soon.

Finally, we need defense in depth so that if any attacking planes get by the first defensive ring, we'll have others to finish them off.

Looking at it in that perspective, the ANG fits readily into our air defense system. The Air Defense Command has authority to order out one or more ANG squadrons in an emergency. We will be ready before long to plug a few gaps in the defense line, but mostly we'll back up the perimeter force. As a secondary mission, the ANG will be available to move in to cover areas that might be vacated by USAF units ordered elsewhere.

In 1950, USAF withdrew some of its fighter units from continental defense to fight in Korea. ANG squadrons were called to active duty to fill in for them at home.

Next time it may be different. USAF fighters may be needed in Europe. USAF has to be flexible enough to move its planes to wherever they're needed. Knowing that the ANG is trained and ready to plug the holes helps maintain this flexibility.

The ANG provides flexibility in another way. When the military budget was cut in 1949-50, the ANG acquired and operated large numbers of surplus F-80, F-84, and F-51 airplanes. As a result, these planes were available to meet the sudden and unexpected requirements in Korea. The recent cuts may again result in the ANG getting first-line jet fighters ahead of schedule which, as before, will increase its capabilities and reduce the effects of the cuts on our air strength.

But we're ahead of our story, for the ANG is a long way from being trained and ready. The twenty-two ANG wings called to active duty in 1950 and early 1951 have now been home a little less than a year. They returned without the planes they took with them into active service. Many of their people elected to stay in the Air Force or decided not to subject themselves to the chance of another call.

Accordingly, the National Guard Bureau's Air Force Division has set up a three-year rebuilding program. As of June 30, the end of the first year, we are just about on course. We have almost 37,000 people—32,500 airmen and 4,200 officers. We have more than 1,800 pilots and about 900 airplanes. Many of our planes, it's true, aren't combat types and most of our fighters and light bombers are obsolescent. But we expect an improvement in that situation before long. Meanwhile, with these planes—plus some T-33s just being assigned to our squadrons—we'll be able to keep our pilots proficient so they'll be ready for the newer models when they arrive.

By June 30, 1955, if all goes well, we expect to have a 70,000 man ANG with twenty-seven wings, about 100 squadrons, and around 2,000 combat-type aircraft. We also have plans for 168 replacement training squadrons which will eventually provide each of our combat squadrons with a built-in reservoir of trained and willing personnel.

Fully manned and equipped, the ANG will give the American public one-fifth the striking force of USAF.

Geographically, ANG squadrons are based in forty-eight states, D.C., Alaska, Hawaii, and Puerto Rico. Our twenty-seven wing headquarters are located in twenty-four states, with two wings each in New York, Pennsylvania, and California. Most

(*Continued on page 60*)

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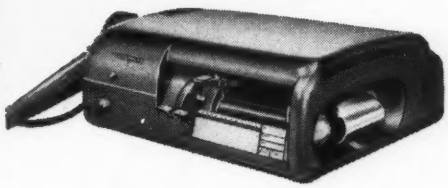

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Combining greater flight availability and lower maintenance costs with superlative performance, the F-94C Starfire actually delivers more defense for your dollar.

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Builds Plane No. 25,000 and Jet No. 5,000

Lockheed airplane Number 25,000 rolled off the production lines recently in Lockheed's Burbank, California, plant. Significantly, it was an F-94C Starfire Jet Interceptor, newest member of Lockheed's pioneering jet aircraft family. Later, another Lockheed Starfire became the 5,000th Lockheed jet to be built.

There's a reason for the quantity production of F-94C Starfires. Here's a military jet that does an outstanding job and saves money, too.

Here's How It Does It

Economy is important with the Air Force, and here's how the Starfire helps on the budget:

An economical airplane is one that performs its mission with greatest efficiency and offers maximum availability on the ready line. Maximum time between servicings means *lower maintenance costs*. More important, it means *fewer planes are needed*. The U.S.A.F. provides both types of economy with the Starfire.

2-Man Team Helps

Since the Lockheed Starfire is a 2-place interceptor, it utilizes the cooperative efficiency of a 2-man team to compute the tactical problem and perform all other split-second operations of intercepting an enemy at 600-mph-plus speeds.

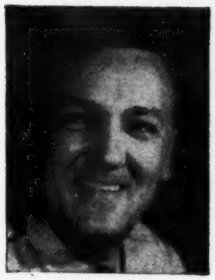
This all-weather interceptor is equipped with automatic electronic controls — Hughes Radar System, Westinghouse Automatic Pilot, Sperry Zero Reader—and other advanced devices, making it very nearly an automatic airplane.

A "Pilot's Airplane"

Reports coming in from the field indicate that Lockheed has again produced a "pilot's airplane." Air Force pilots like the Starfire and like to fly it. They find it simple to fly and rock-steady under actual instrument conditions.

Here is the happy combination of 4 important factors in one reliable airplane: (1) Superlative performance — (2) Easy maintenance — (3) Pilot popularity — (4) More defense for your dollar.

ANGuard ANGLES



Al Scholin

NOW THAT summer camp is over, ANG leaders are surveying problems ahead in the coming year. Most of them can be grouped into one of three categories—airplanes, facilities, and personnel.

The airplane picture is improving and promises to get much better before long. Some 200 more F-51s have been added to the pot being divided up as summer encampments come to a close. In the jet line, in addition to T-33s and F-80s previously announced, some ANG squadrons are to get F-84Ds, with F-86s scheduled to arrive in the next calendar year.

In facilities, 1954 is the peak year for expansion in ANG's three-year build-up program. NGB reports that one-third of all ANG squadrons are based on fields which don't meet minimum standards for jet operations. Accordingly, the current budget calls for $25 million to be spent this year to lengthen runways, build hangars, provide fuel storage, and take care of other urgent construction needs. Many states are also contributing funds or acreage to this expansion program.

* * *

But what about personnel? Up to now in its rebuilding efforts the ANG has been leaning heavily on its appeal to boys under the 18½ year draft age who can meet their military service obligation by joining the ANG. While they fill vacant spaces, these youngsters are inexperienced both in military life and in technical skills. An entire year of ANG drills and summer camp totals fewer hours than a USAF recruit spends in indoctrination training alone. On a long term basis, reliance on this source of personnel would inevitably lower the quality of the ANG. It's up to squadron commanders to send a good percentage of these recruits to USAF indoctrination training and into tech schools.

* * *

A better prospect for personnel is ahead, though. Early in 1954, USAF will start releasing airmen who enlisted for four year service on the outbreak of war in Korea. Most of these men must retain some sort of reserve affiliation. They are men with skills the ANG needs.

Some time ago Dr. John A. Hannah, Assistant Secretary of Defense for manpower and personnel, urged that the draft exemption for 18½ year olds in the National Guard be cut out. His plan was shelved when the National Guard Association and many State AGs sounded off in violent opposition, but it may come up again. It's a good bet that most ANG leaders would be willing to reduce that source of personnel if they could be assured of enlistments from men leaving after four years of USAF duty.

USAF is setting up a schedule to spread out discharge of four-year men, keying their release to anticipated new enlistments. This means that many airmen will be released before their full enlistment is up. Since January is a good month for recruiting, it's likely that discharges will step up about that time.

It isn't too early to start planning ways to attract these USAF veterans to ANG assignments where they can meet their reserve obligations and at the same time add to their income and continue to develop skills acquired on active duty.

* * *

Meanwhile, the critical shortage of medical officers in the ANG and other reserve components is getting considerable attention at top echelons of the NGB and the Department of Defense. They're seeking a plan acceptable to Selective Service to permit doctors subject to military duty to accept appointment in reserve units—perhaps with the understanding that they may be called to EAD individually if they're needed. Right now doctors in 1-A category can't be given waivers even to join the ANG while they're awaiting call. Yet ANG service in the interim would help prepare them for active duty by familiarizing them with regulations and SOPs.

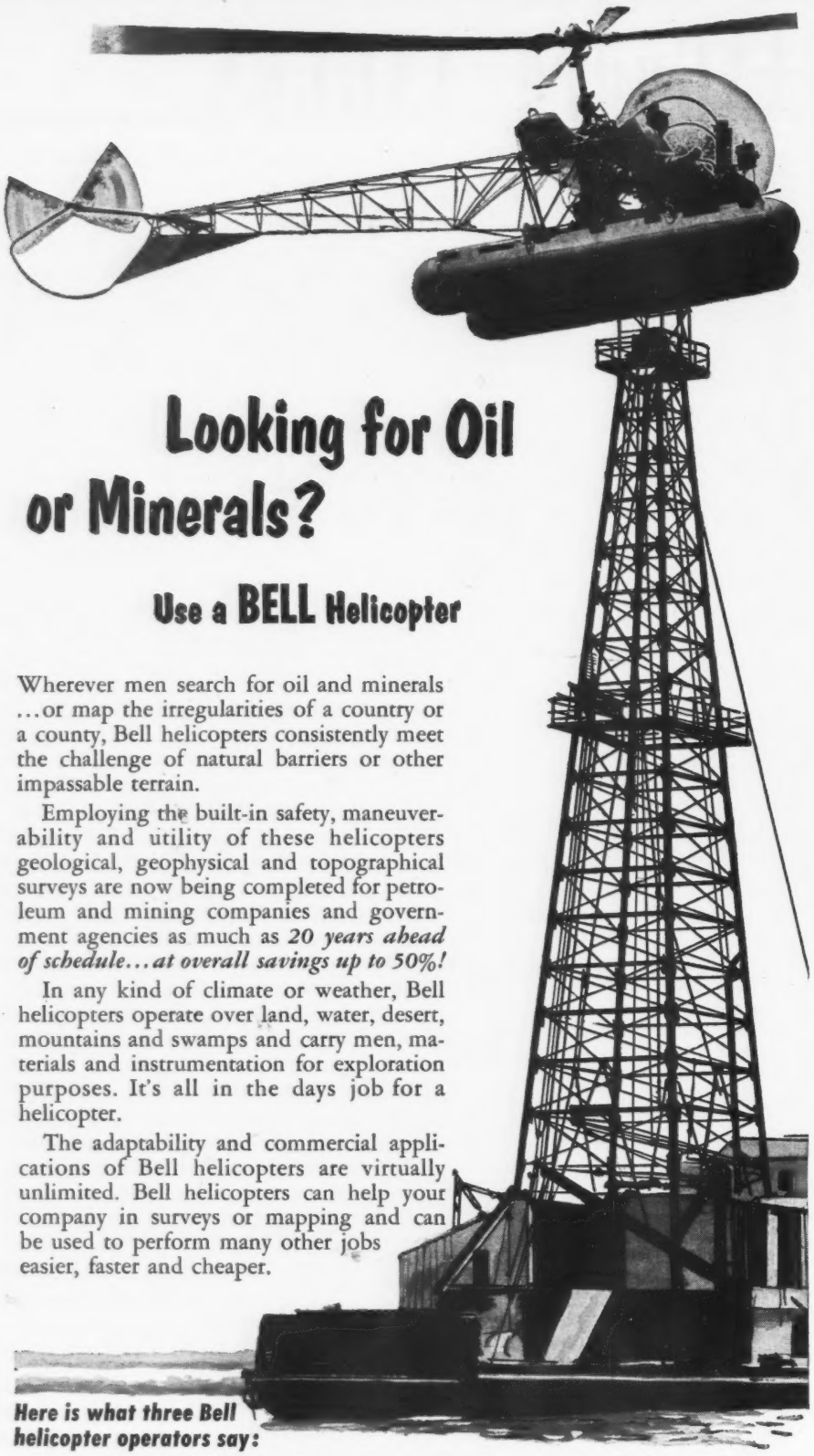
* * *

SCRAPS ON THE INTAKE SCREEN . . . General Nathan F. Twining, USAF's third chief of staff, started his military career as a National Guardsman on the Mexican border, won appointment to West Point from Guard ranks. . . . NGB is putting the finishing touches on a nationwide recruiting campaign. Major effort is directed at business leaders to cooperate in encouraging employees to join. . . . Duluth, Minn., high school students got an impartial briefing on military service through "Operation Senior," developed by Minnesota's 179th Fighter-Interceptor Squadron. Lt. Col. Ralph Jerome, squadron CO, arranged with representatives of all services to participate in a joint panel discussion. . . . A sudden operation ordered by his physician cut short plans of Maj. Gen. Earl Ricks, Chief of the Air Force Division, National Guard Bureau, to visit all ANG encampments this summer.

* * *

ANG ANGLES gets a new editor starting next month. Your present correspondent has accepted a civilian assignment with the Air Training Command at Scott AFB, Ill., which makes it difficult to keep in close touch with NGB headquarters in the Pentagon. To all those who have helped launch this column and provided material for it, thanks and best regards.

By Maj. Allan R. Scholin, ANGUS



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"The survey accomplished by Bell helicopters in one summer would take 20 years by any other method."—JAMES S. RICKLEFS, Rick Helicopters, Inc., Los Angeles, California.

"Allied's Bell helicopters have done mapping and survey work intheRockies and Alaska at savings of 50% and more over other methods."—ROY B. DAVID, Allied Helicopter Service, Tulsa, Oklahoma.

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wings are made up of squadrons based in two or more states. For example, the 144th Fighter-Bomber Wing at Hayward, Calif., has squadrons in California, Nevada, and Utah. The 123d Wing in Kentucky also has squadrons in North Carolina and West Virginia.

Of our twenty-seven wings, twenty-three are fighters, two are light bomb, and two are tactical recon. Six of our fighter wings—those located on our northern perimeter—are designated as fighter-interceptors and on recall would be assigned to the Air Defense Command. However, the seventeen others in our defense plan have also been earmarked for air defense assignments for as long as they'd be needed, after which they would turn to fighter-bomber tasks, providing tactical air support for our National Guard ground forces.

In rebuilding this organization we have several major problems to lick.

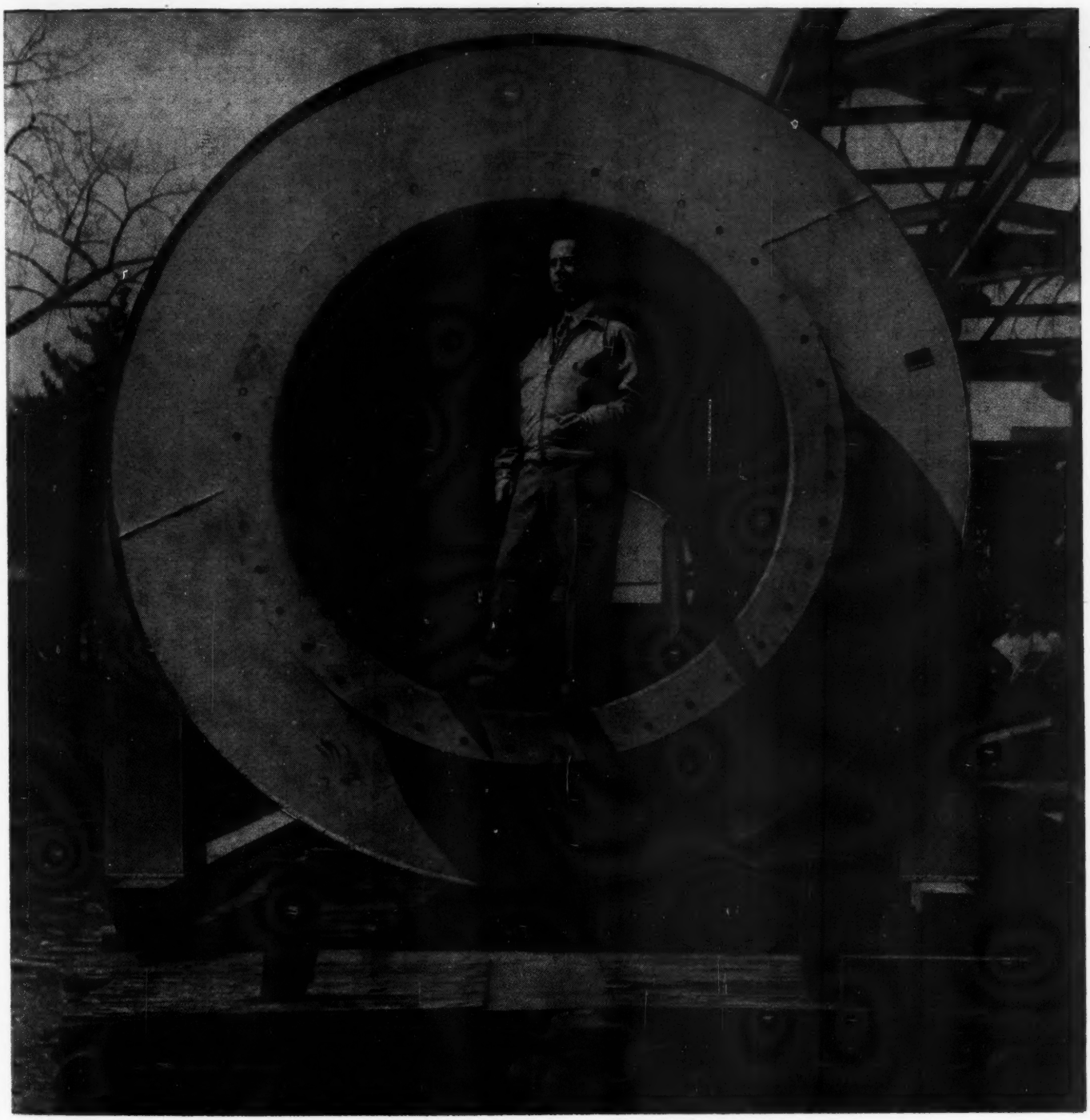
We're short of aircraft but they're assigned to us by USAF so procurement is their problem—though we never pass up a chance to remind them of our requirements.

Our biggest headache is adequate facilities. We have to locate our units reasonably close to populated areas since most of our men live and work there. But cities have grown so fast that many have hemmed in their airports with new housing or industrial construction. At the same time commercial air travel is rapidly expanding. As a result, many of our runways are cramped.

There are three ways to get around this problem and we're working on all three. If possible, we get together with state and city officials to lengthen runways and make available the facilities we need. If that can't be done, we look for other fields in the vicinity to which we might move the ANG unit. This invariably calls for some type of construction or modification at the new facility. If neither of these plans is feasible, the third and last resort is to continue operating as well as we can from whatever facilities we have while we're on inactive duty but to have a location in mind to which the entire outfit would immediately be moved if it were called to active duty. This requires that we, in conjunction with USAF, maintain some sort of standby operation at the designated location.

For these three purposes, the ANG will spend $25 million in the

(Continued on page 63)



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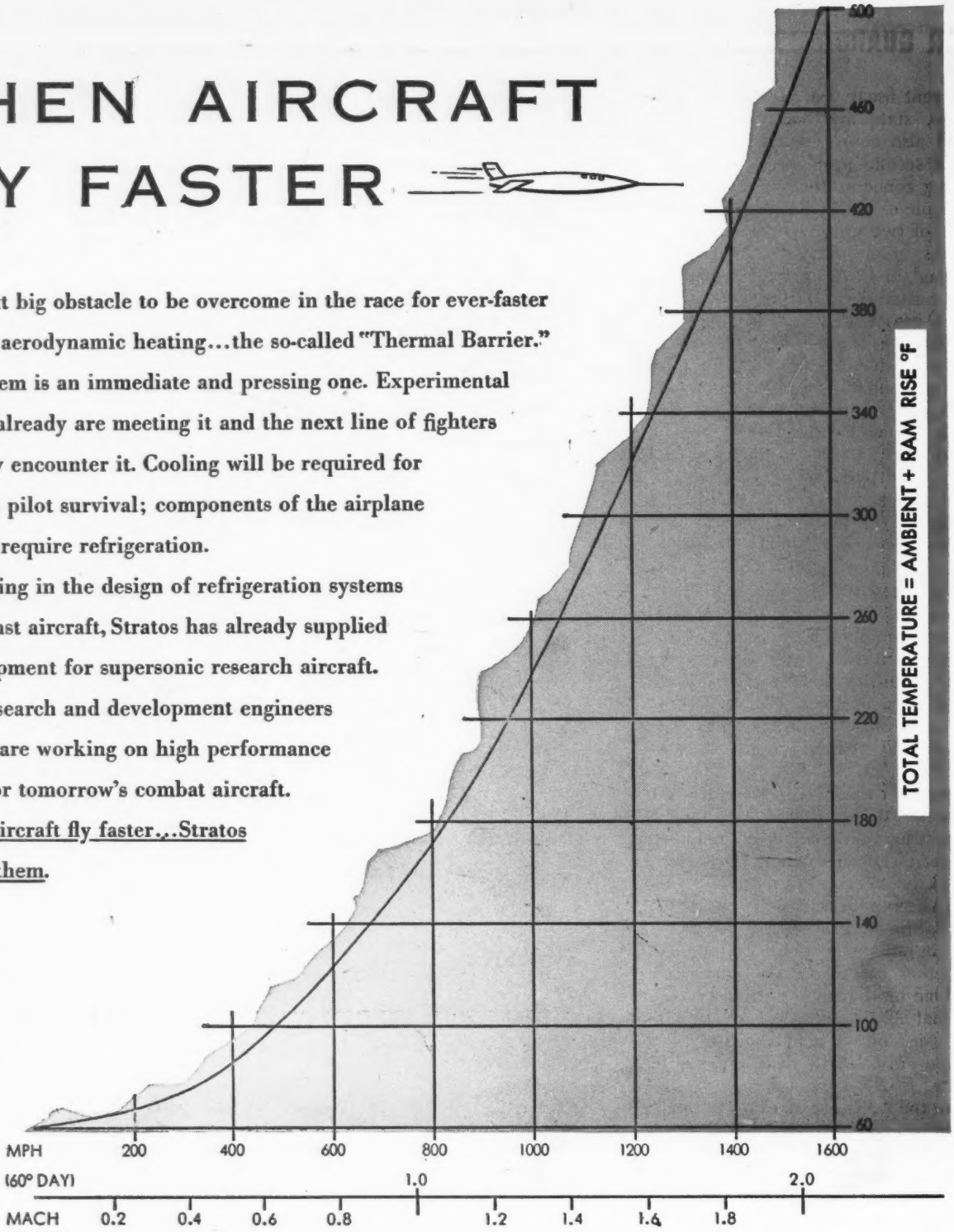
WHEN AIRCRAFT FLY FASTER

The next big obstacle to be overcome in the race for ever-faster aircraft is aerodynamic heating...the so-called "Thermal Barrier." The problem is an immediate and pressing one. Experimental airplanes already are meeting it and the next line of fighters will surely encounter it. Cooling will be required for more than pilot survival; components of the airplane itself will require refrigeration.

Pioneering in the design of refrigeration systems for very fast aircraft, Stratos has already supplied such equipment for supersonic research aircraft. Stratos research and development engineers currently are working on high performance systems for tomorrow's combat aircraft.

When aircraft fly faster...Stratos will cool them.



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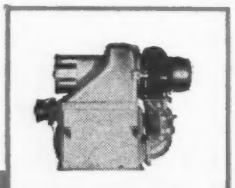
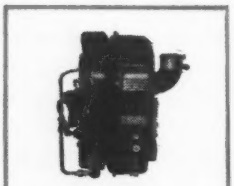
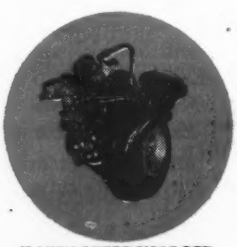


REFRIGERATION PACKAGE FOR B-47 "STRATOJET"



AIR-TURBINE DRIVE FOR OPERATING ACCESSORIES

BOOTSTRAP COOLING UNIT FOR TRANSPORT AIRCRAFT



CABIN SUPERCHARGER FOR TRANSPORT AIRCRAFT

current fiscal year. In almost every case, state and local governments will also contribute.

A second problem we are discovering concerns the skill level of our personnel. Most of them fall into one of two groups—experienced veterans, many of whom have twice served in USAF on active duty, or youngsters just out of high school who are willing but inexperienced.

To meet this problem we have set up intensive on-the-job training programs, but it takes time to develop a trained technician when you have only a few hours a week to work with him. USAF technical schools are wide open to ANG personnel, but not many men can leave civilian jobs for the time required to complete these courses. This problem will become more apparent at squadron level when we get more aircraft to maintain. It may also be alleviated when the boys who enlisted in USAF upon outbreak of the Korean war start returning home early next year.

A third problem area is in operational training which requires cooperation between working echelons of USAF and ANG units. The only reason for the ANG's existence is to provide USAF with an immediate expansion of combat potential in event of an emergency. Close teamwork between ANG units and their USAF counterparts will be essential in fighting off an unexpected attack. It can only be developed by working together before an emergency hits.

One hindrance to getting together is that ANG units do their training on weekends or in evenings, at times when most USAF personnel are off duty. USAF is in a better position than the ANG to make the necessary adjustment here, since the ANG people, however willing they might be to cooperate, are governed by the hours assigned by civilian bosses.

But no one wants to hear too much about someone else's problems. With a little thought, hard work, and good friends, the ANG has overcome quite a few problems in its short history. The same ingredients properly mixed should serve to do it again.—END

CREDITS

Pages 39, 79, and 108—Arlo Greer; page 47, upper cartoon—Herblock, The Washington Post; lower cartoon—Hubenthal, Los Angeles Examiner; page 48—International News Photos; pages 88 and 89—Robert Burleigh; pages 143 and 145—Capt. Jack Jordan.

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Drawing courtesy of Piasecki Helicopter Corporation, Morton, Pennsylvania

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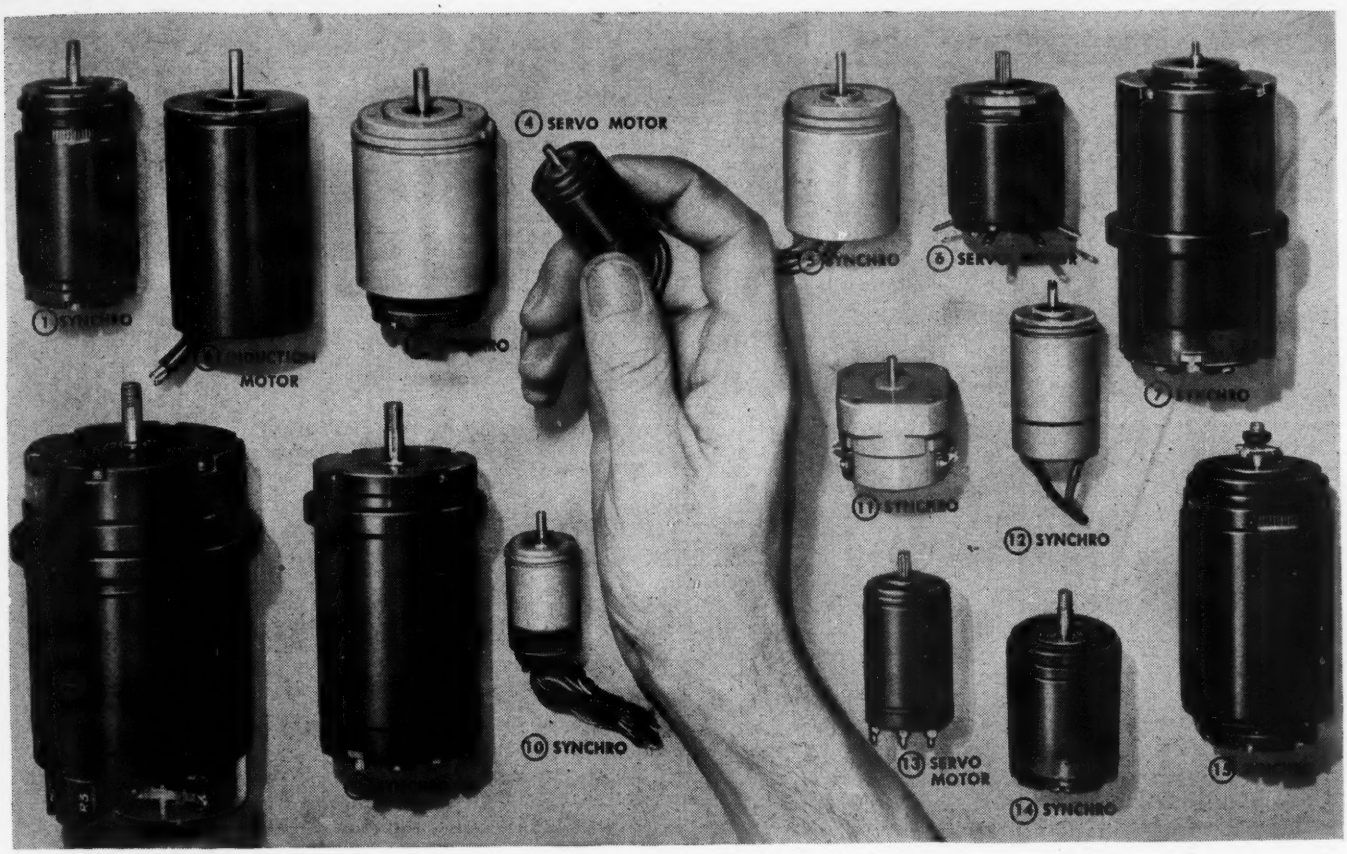

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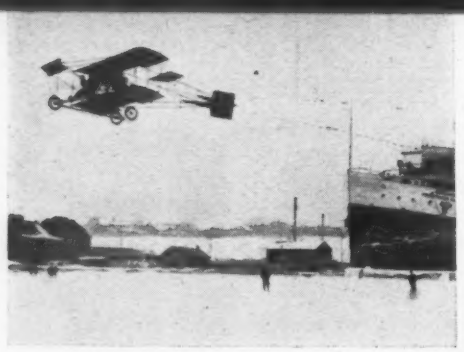
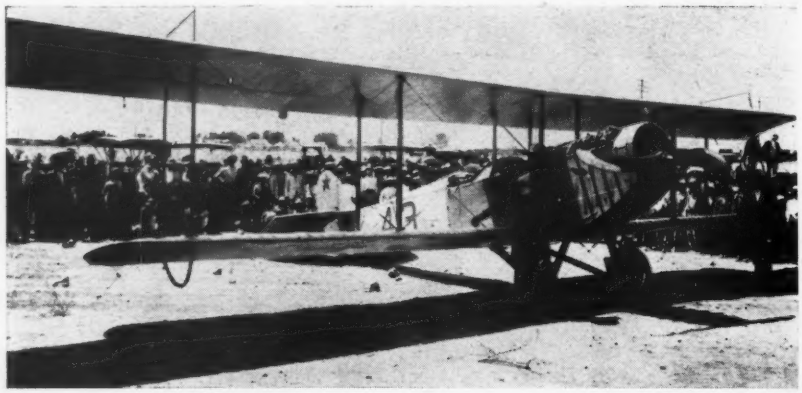


Lake Erie was frozen over February 20, 1912, when Earl Sandt took off from Erie, Pa., and flew across the lake to Long Point, Ont., 30 miles away, and back.



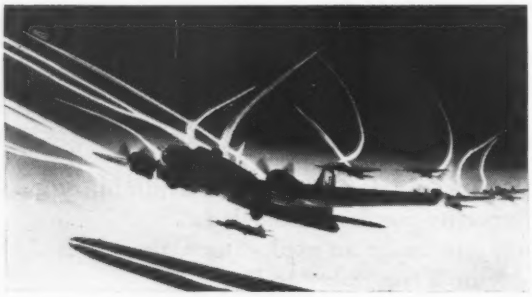
Maj. H. A. Dargue, a member of the Punitive Expedition to Mexico, 1916, was stoned by this angry crowd of Mexicans. But as long as the cameraman took pictures, the crowd kept peacefully at its distance.

In October 1922, Army Lieutenants John A. Macready (left) and O. G. Kelly set a non-stop record from San Diego, Calif., to Fort Benjamin Harrison, in Indiana.

Point of No Return

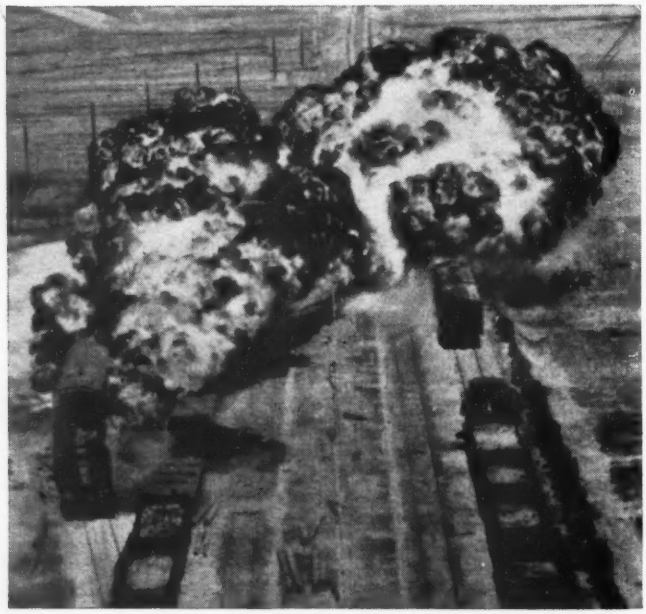
Moving into the second half century of powered flight, let's look at the first

THE PAST year was full of stirring events," wrote Bishop Wright as he closed out his 1903 diary. And one of the "stirring events" was provided by the Bishop's two sons—Wilbur and Orville. They had become the first men to make a powered flight. It was a modest beginning (see page 18). Twelve seconds, 120 feet, altitude ten feet, and a speed of seven or eight mph. That was on December 17, 1903, at Kitty Hawk, N.C. Today, fifty years later, the world is looking back and forward from its mid-century vantage point to that first flight. It is a contemplative look. Would there be a similar chance to glance ahead and back fifty years hence?—END



Fighter contrails streak the sky behind WW II B-17s in the ETO as airpower comes of age.

To WW II vets recalled to Korea, the name was different. It looked like a P-51. It was.



The benefactor of this fiery napalm attack by B-26s on a rail junction at Munchon, North Korea, was the infantryman battling for his life and the rugged ridges of Korea. Another trainload of materiel wouldn't reach the front.

ANOTHER REASON ALLISON LEADS IN THE AIR

An Allison Technical School instructor leading class discussion on the J35 Turbo-Jet engine.

Training the men behind the men who fly the jets

Around the world there is an ever-growing fraternity of mechanics, engineers and instructors who have earned the title, "Allison Technical School Graduate." More than 10,000 members of the Air Force, Navy and Marines have received diplomas from the Allison Technical School, in Indianapolis.

Students selected by the Armed Forces are usually engineering officers or enlisted personnel with long years of service. They are sent to the school for intensive 4-week courses which involve long hours in the classrooms and extra hours of homework every evening.

Skilled Allison instructors with many years of varied experience make use of modern teaching aids including cutaways of J33 and J35 Turbo-Jet engines, the T38 and T40 Turbo-Prop engines.

But the activities of the Allison Technical School do not stop with the classes at Indianapolis. In addition, Allison instructors from the school go out all over the world to set up classrooms at air bases and aircraft manufacturing plants to teach thousands of other technicians the proper methods of operating and maintaining Allison turbine engines. These men include pilots, flight engineers and technicians from aircraft builders and our own organization.

Yes, thousands of the men behind the men who fly the jets proudly wear the badge, "Allison Technical School Graduate."

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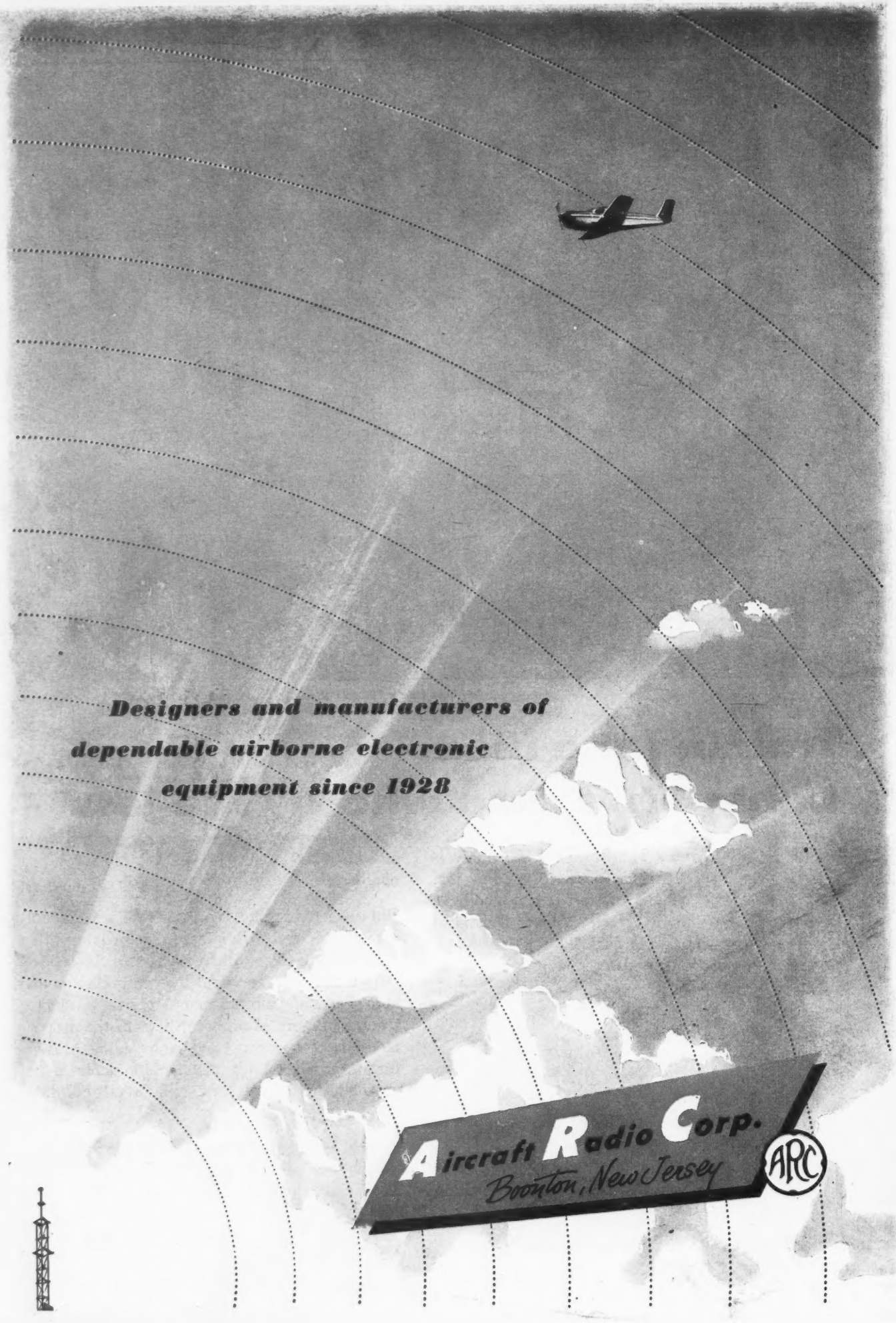
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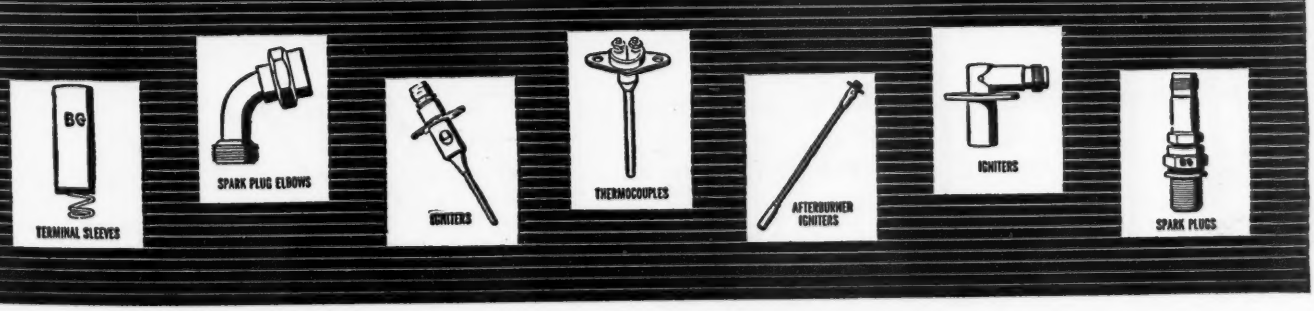

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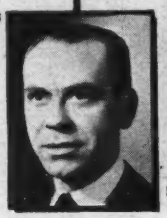

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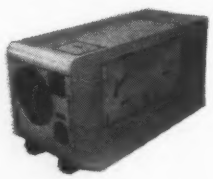

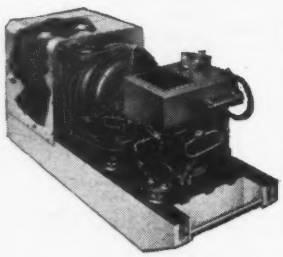

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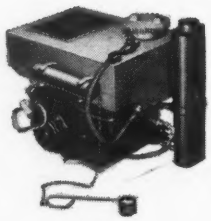

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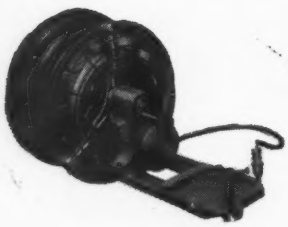

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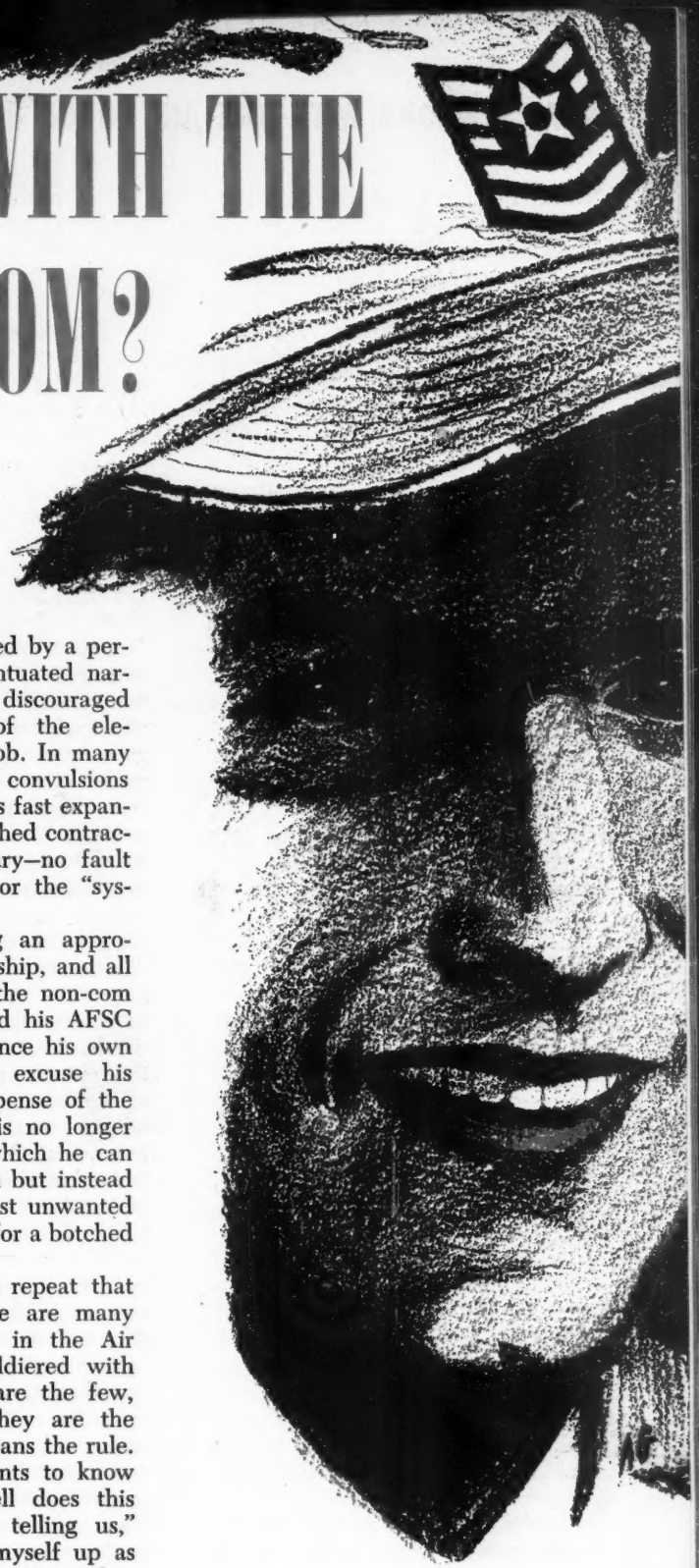
WHAT'S WRONG WITH THE AIR FORCE NON-COM?

Non-coms are being robbed of responsibility and dignity, this master sergeant feels



WHAT IS wrong with the Air Force non-commissioned officer? Nothing that can't be cured—although a little drastic surgery will be necessary before he's a well man again. But before we prescribe, let's examine the patient and try to diagnose his ills.

The non-com in today's Air Force is but a shadow of himself, shorn of his dignity, prestige, and authority. And that is the basic symptom of his malady. True enough there are individual, outstanding examples of the non-com as he should be, and as he is described in regulations and in the dictionary, but these men are so few and far between that it's a safe bet to say that the non-com as such does not exist.

However, his sad state is not entirely his own fault. Indeed, he is more often sinned against than sinning. He has been clouted by a never-ending series of thumping developments which were—and still are—out of his control. The turbulent conditions within the Air Force following the mass demobilization after World War II, the sudden mounting of the Berlin Airlift, and the Korean war all contributed in large measure to his present deplorable state.

But whatever the cause, the result—a poor quality non-com—is a thorny fact, unpleasant to face up to, but nonetheless a cold, brutal, and extraordinarily expensive fact.

Let me lay the cards on the table. I charge that the non-com is not delivering his rated horsepower, but, paradoxically, only because he is not required to do so—nay, not even expected to. I am not referring to a day's work but rather a fuller participation in all phases of a non-com's duty and responsibility. Instead he has allowed himself to become exclusively a technician, surrendering along the way his other rights and responsibilities. In this he was aided and abetted by a personnel policy that accentuated narrow specialization and discouraged broad understanding of the elementary nature of his job. In many cases the accordion-like convulsions of the Air Force, with its fast expansion and austerity-garnished contraction, made this necessary—no fault of either the non-com or the "system."

Instead of exercising an appropriate amount of leadership, and all that the term implies, the non-com has taken refuge behind his AFSC as a bludgeon to influence his own personal aims and to excuse his shortcomings at the expense of the Air Force. His AFSC is no longer a career ladder upon which he can climb in orderly fashion but instead it is now a shield against unwanted duty and an absolution for a botched job.

At this point let me repeat that I am aware that there are many fine, competent NCOs in the Air Force, and I have soldiered with some of them. These are the few, the real article, but they are the exception and by no means the rule. And before anyone wants to know ". . . just who in hell does this character think he is, telling us," let me say that I set myself up as no paragon of military virtue but merely as an observer, a scorekeeper, as it were. Let one and all take a good hard look at themselves and their military associates, and meditate on the result.

What then is the main case against the non-com? Without fiddling around with fancy words and neatly turned phrases, I'll just point my finger at a few items of concern to all hands.

My biggest charge against the non-com is that he is "one of the boys." He has cultivated the "Good Joe" idea and has gone all the way. Instead of discovering and respecting the line that divides familiarity and friendliness, he has diligently ripped down this invisible barrier at every opportunity. In effect, he has descended to the lower levels of the military hierarchy. He denies in practice all of his struggles to climb out of the cellar—he yearns after the mass approval of his subordinates; he repudiates his stripes, tradition, and regulations. In short he has ceased to be a leader.

In mortal fear of being called

(Continued on following page)

"chicken"—and I use this word in its original sense when it was a two-word phrase—he has covered up the hair on his chest, adding at the same time another measure to his lost prestige. Unfortunately, he cannot risk the charge of being "chicken" because all too often bitter experience has demonstrated that his so-called "chicken" attitude will not be supported—not even by his own squadron officers. Sad to relate, a working non-com, in the performance of his duty, is often left holding the bag. Check your own file on this.

Thus we see that the "Good Joe" scheme of things becomes a vicious circle with good, old lovable Sgt. Good Joe and the whole NCO corps in the middle, neatly neutralized and counted ineffectual by both officers and men.

But is Sgt. Good Joe entirely at fault? Is he to be condemned just because he seeks the warmth and comradeship of his fellows? No, he is not!

He is just another victim of misplaced interpretation of leadership. He wants to get along, never suspecting that to be a boss he must get along but he must at the same time remain boss. But there is someone else to blame for Joe's lonesome state, and that someone is the one who instituted a policy of wholesale issue of stripes so that every Tom, Dick, and Harry now has a sleeve full of meaningless embroidery.

To this extent Joe is a victim of a condition entirely out of his control. Not one "Joe" in fifty is a leader and no one knows it better than Joe. He is a technician, pure and simple, forced to masquerade as a non-commissioned officer, and if the truth were known he would just as soon remain a technician and nothing more.

To understand the decline and fall of the non-com, it's necessary to examine the factors which made him what he is today.

His troubles started before he was in the service—if he came in after 1942—when the system of technical specialist ratings was abolished. At one stroke of a pen everyone in certain categories became a non-commissioned officer, and presumably a leader, in one degree or other. This perversion of human capacity was compounded by greatly increasing the number of NCO slots in the TO&E so that chevrons became as commonplace as buttons—and as meaningless.

The authority of corporals and buck sergeants went by the boards almost at once—staff sergeant held out for awhile but not too long. Not much later tech sergeant and master stripes became so commonplace that there were many, many more chiefs than Indians. The character and integrity of chevrons entered a period of wild inflation which remains to this day. Stripes became counterfeit in every transaction except at the paytable.

When the war ended and the rush to be discharged ran its course, the Air Force found the ratio of chiefs to Indians even more loaded. To make matters worse, non-com warrants in the top enlisted grade were handed to thousands of ex-officers, and while many of these men were worthy and competent, many others were not. Here was created a situation which engendered a fatal cynicism in both the enlisted ranks and the commissioned ranks and contributed to the general deterioration of the professional non-commissioned officer corps.

Ex-officers, reincarnated as master sergeants, growled that the career non-coms were ganging-up on them, wouldn't teach them anything, while the genuine non-coms, on their side of the fence, alleged that the former officers were in cahoots with the brass, that they were inefficient, untrained, and completely disinterested in the Air Force. What's more, they filled T/O slots which were the rightful property of the career people. This feeling of bitterness did not evaporate until the start of the Korean war when many of the "quick-mix" non-coms were recalled as officers, but even this did not salve the wounds—especially on the career enlisted side.

All of this led to the demoralizing of the career non-com. On the one hand he was confronted with a horde of striped technicians intent on their own limited specialty and nothing more, and on the other hand by a group of men, who never really learned their trade.

The true NCO went down under the weight of numbers. He was lumped together with the rest of the stripe-bearing population of the Air Force. Master sergeants found themselves threatened with KP and many of them actually performed this duty. No regard was taken of rank, physical age, and length of service. A great leveling took place and all enlisted men were just plain enlisted men.

The spectacle of buck sergeants acting as first sergeants was not at all unusual. In one recent case, a female was widely publicized as the first sergeant of an all-male outfit! Top grade enlisted men were told, and then shown, ". . . you ain't no better than anyone else, Pop." Top graders were, and still are, obliged to endure barracks accommodations no better than those provided for raw recruits. The great leveling erased the non-commissioned corps.

Any non-com with genuine career potential and motivation found this hard to square with recruiting brochures which took detailed pains to explain that he was actually a $5,000-a-year junior executive, a valuable and valued man to the Air Force.

All this would be good clean fun except for the fact that top-quality men left the Air Force as a result.

But the flow of stripes did not stop. Bogus non-coms continued to be created and the problem—stripe-bearing technician vs non-commissioned officer—remained. Indeed, it was magnified by the Korean war, with its accelerated expansion. Recruits with less than two years service felt aggrieved if they were not at least staff sergeant.

One of the things wrong with the Air-Force non-com is that there are too many of them! In this regard the NCO is not at fault—if he didn't try to get ahead he wouldn't be worth a damn.

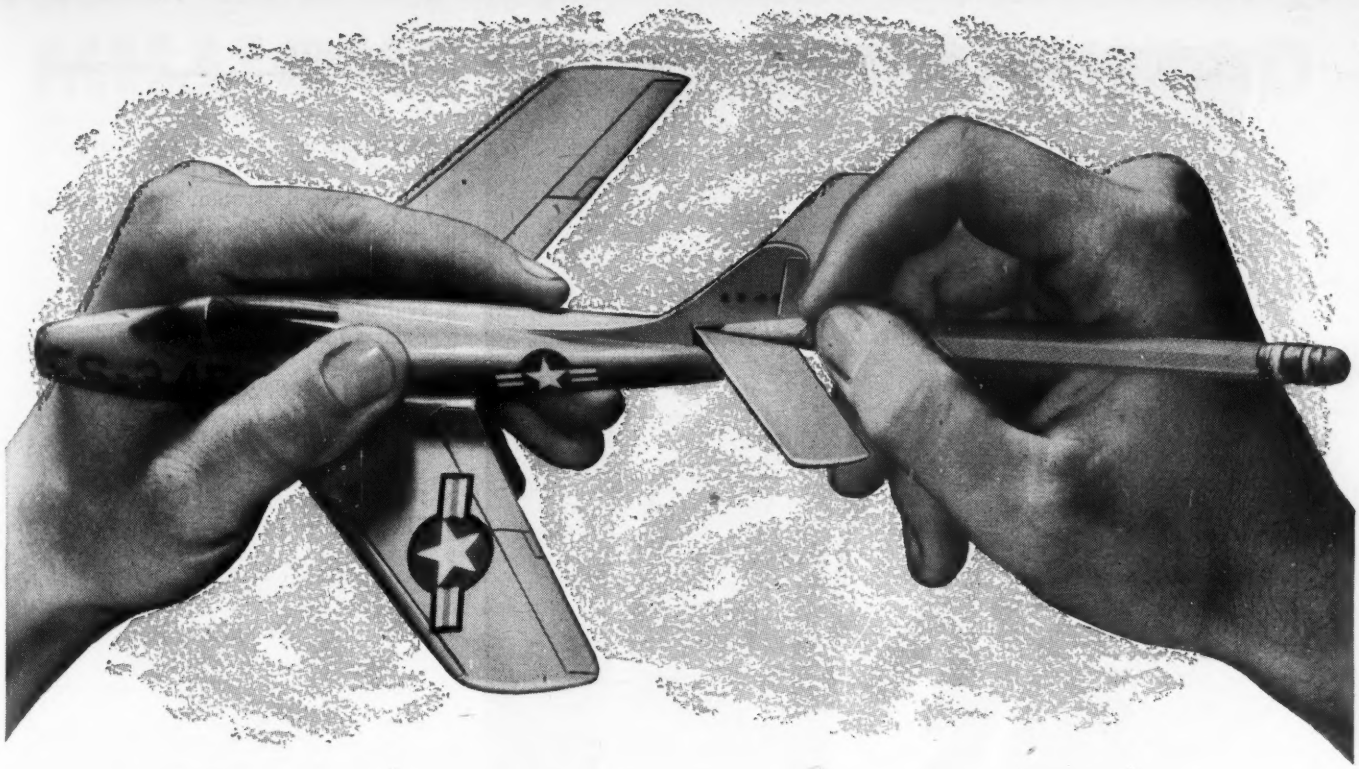
What is to be done about this situation? How can a genuine non-commissioned officer corps be re-established?

By drastically reducing the number of non-commissioned officers, that's how! By reversing the specialist-to-non-com sleight-of-hand of 1942. It should be obvious by now that not every crackerjack mechanic, truck driver, cook, clerk, weatherman, or what have you is by virtue of that ability, also a leader.

Like any major surgery such a step is not to be taken lightly. To sop up the blood when the stripes of forty-five (name your own figure) out of every fifty men are snipped away, provision must be made to protect the men affected against financial loss, for it is in the sensitive region of the wallet that the cutting would be felt most acutely.

The transition from non-com grade to specialist grade should not carry the stigma of "being busted." Far from it. Any readjustment must

(Continued on page 82)



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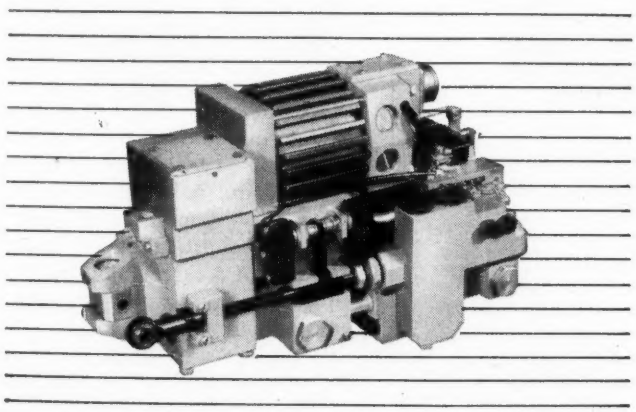

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be a lateral move, giving the same pay and allowances presently in force.

A revised system of specialist ratings could do this, and safely too. To be effective, the specialist rating system would have to be realistic as far as salary is concerned. Salary for a specialist would have to parallel that paid a non-com for the same degree of specialization.

To explain more clearly, let us suppose that we have already revised the airman side of the Air Force. Specialist ratings, starting at "1" for the lowest degree of skill and running to "7" for the highest, have been established. Specialist grades "5," "6," and "7" parallel the grades of staff sergeant, tech, or master. The non-com grades, and insignia, remain as they are—staff, tech, and master.

To make the change obvious, a new family of technical insignia of suitable design has been created. These are to be worn a few inches above the cuff of one sleeve, on the breast of the fatigue uniform and on the fatigue cap. This insignia would perhaps be best made of metal and designed to be easily attached and removed to facilitate easy cleaning of the garment.

This distinctive insignia is necessary to eliminate any shred of the old corporal and buck sergeant era that implies, because of the chevrons, that the wearer is a non-commissioned officer. By suitable design and appropriate color, the grade and technical specialty of the wearer would be plain to read. Most important, this insignia worn on an otherwise bare sleeve would proclaim to one and all that the wearer was a man of technical competence, valuable, and paid according to his merits as demonstrated on his sleeve. In short, that he is not a jerk and not a career blockhead with a plastic, all-weather pass to the chow hall.

In addition to being paid at a rate parallel to that enjoyed by a non-com of equivalent pay grade, specialists at the non-com level would be eligible for the non-com privileges—separate rations and other allowances. He would be permitted to move his family at government expense as a right, guaranteed by regulations.

The lower ranks of specialists would be paid at rates paralleling current rates for the lower four grades, and that's all. Hazard pay would be the only exception.

(Continued on page 85)

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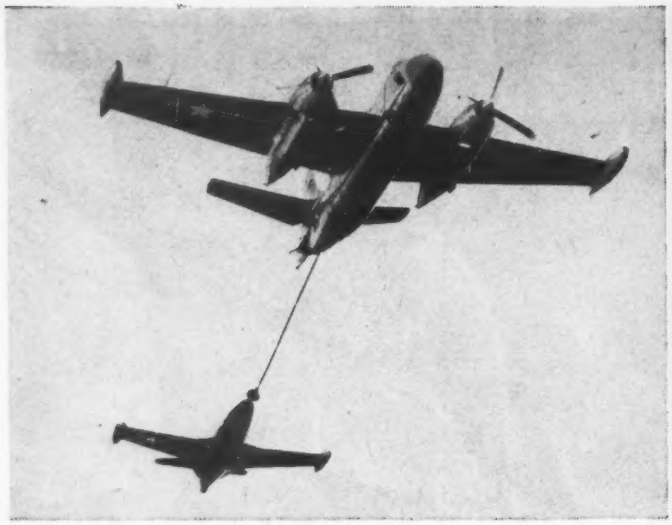
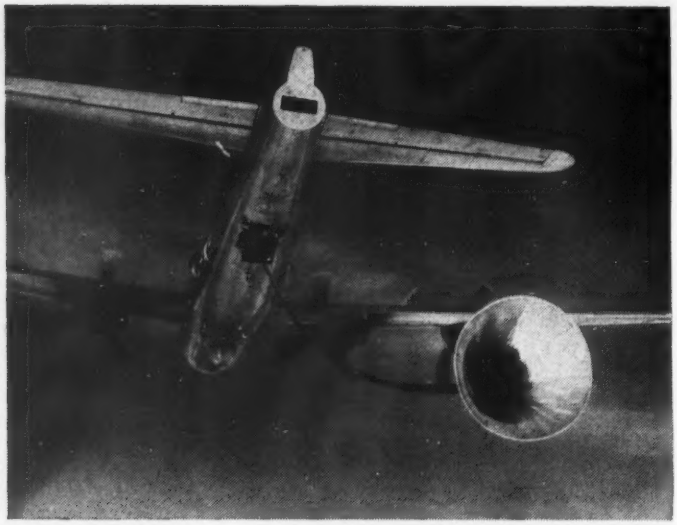
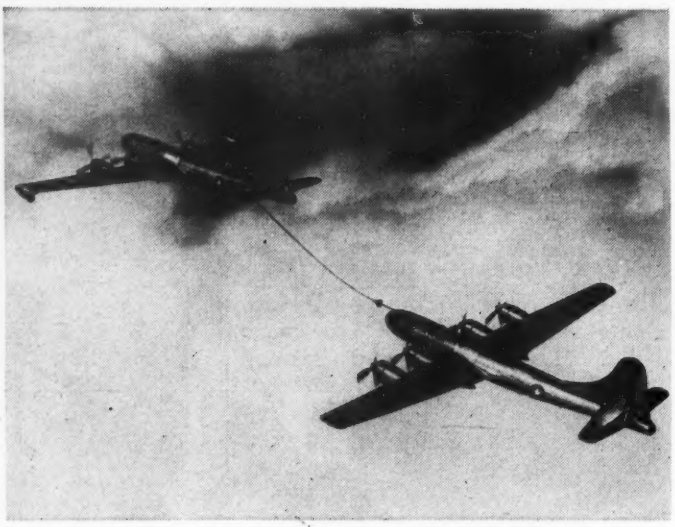


FLEXIBLE. Requires only normal formation flying proficiency, even in rough air, to maintain contact.



PRACTICAL. No special operator required; contact is simpler than making a landing.

MULTIPLE. Several fighters can be refueled simultaneously with wing-tip hose units.



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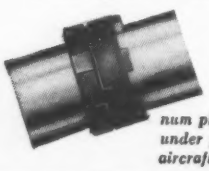
Consisting of a simple hose reel, easily installed or removed from the tanker aircraft, a funnel-shaped drogue and a retractable probe in the receiving plane, the system is simplicity itself. No special crew training is necessary. Pilots report contact is simpler than making a landing.

Because of the flexible nature of the system, refueling can be accomplished in rough air and the rapidity of fuel transfer under pressure reduces the contact time to but a few minutes.

For the United States Air Force and the United States Navy, aircraft are now being equipped with FR refueling equipment to give our fighters and bombers virtually limitless range and/or duration.



Flight Refueling, Inc. also makes the famous FR lightweight, flexible pipe connector for joining aluminum pipe 1" to 4" in diameter. Maintains fuel-tight connection under pressure even when flexed 10°. Widely used on many jet aircraft. Write for data sheet.

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NON-COM——CONTINUED

An important aspect of the "technical specialist–non-com" Air Force would be found in the fact that a non-com in every case would be a technician as well as a non-com. In fact, he would have to be a technician before he became a non-com. Thus, we would have an Air Force where every non-com would be a technician but not every technician a non-com.

The opportunity to climb from private to master sergeant in such an Air Force would not be adversely affected by the "specialist–non-com" system. Instead of passing through the intermediate grades of the ladder to staff, the man would progress through the specialist grades. This is not calling the same old thing by a different name because the man could climb all the way up to "7" skill grade without ever having become a non-com.

Upon reaching the grade of specialist paralleling staff, he would become eligible for consideration as a non-commissioned officer. To make the transition he would have to make a declaration of intent and meet certain standards, pertaining to age, character, efficiency, physical appearance, education, and career motivation, to name a few. Once selected he could be sent to an NCO Academy, where he would be hammered into shape.

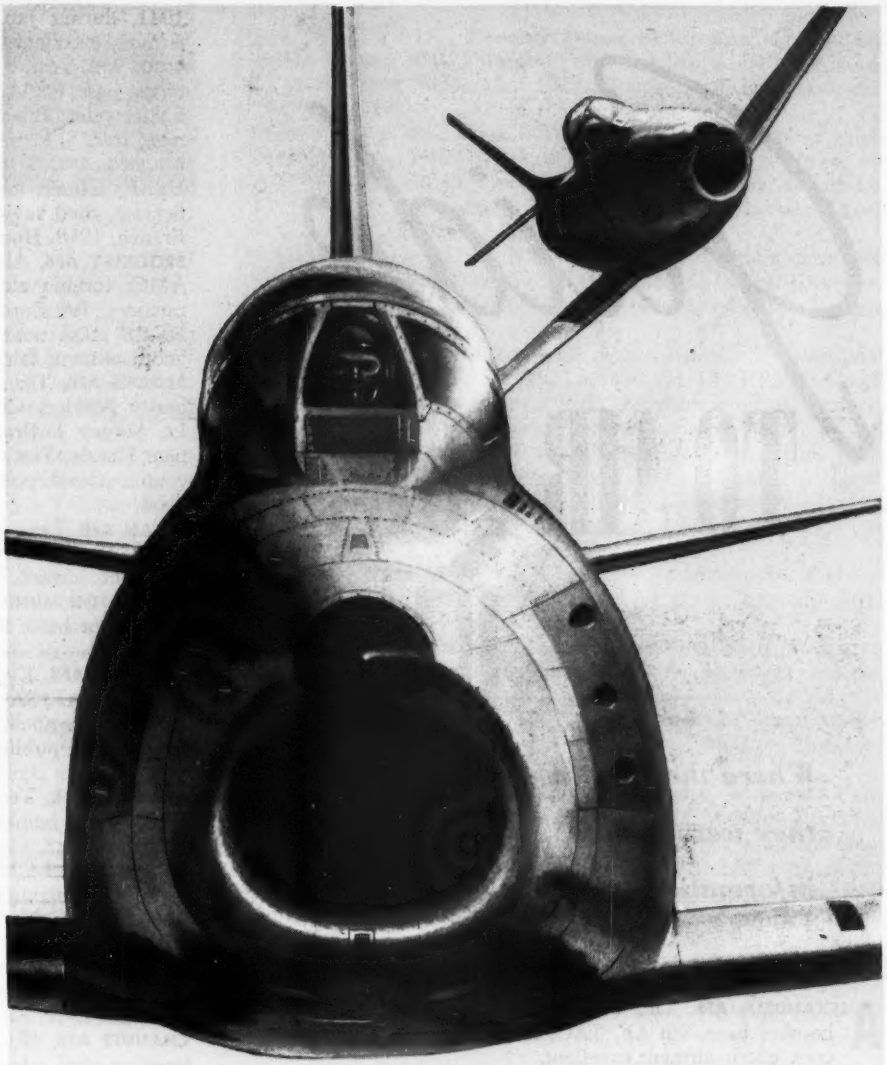
This is the stern medicine I think necessary to reestablish the non-commissioned officer as a useful, vital element in the Air Force and in the Defense Department.

The turnover in key non-commissioned officer personnel would not be as great as it is now because two intangibles (which cost nothing in anybody's budget)–dignity and responsibility–would be reintroduced and would have a holding effect. And the separate facilities appropriate to non-commissioned officer rank would not be too difficult to provide because there would not be that many non-coms to provide for. I think separate facilities are necessary, just as they are necessary in any community whether it be military or civil. In many ways rank is enhanced by appearances.

There is nothing wrong with the Air Force non-commissioned officer –provided he is allowed to be just that.–END

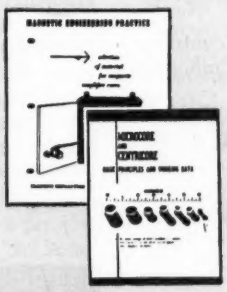
———

The author, a master sergeant, has 11 years in service. In the ETO in WW II, he got out in '45 but reupped in '47. Now a career man, he's married, has a family.



Jet planes are controlled in flight and particularly in aerial combat through servomechanized and electronic (computer) brained assemblies. Fire control accuracy is attained from similar apparatus.

HIS SILENT PARTNER



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Guide TO AIR FORCE BASES

Where they are, what they do, how they were named, and the latest information on housing conditions

ALEXANDRIA AFB, La., 6 mi. NNW of Alexandria. Fighter-bomber base, 9th AF, TAC; named for city. Housing: officers, good; airmen, excellent.

ALTUS AFB, Okla., 2 mi. E of Altus. Troop carrier base, TAC; named for city.

AMARILLO AFB, Tex., 14 mi. SE of Amarillo. Jet mechanics and airframe repair schools, TTAF, ATRC; named for city. Housing: officers, excellent; airmen, excellent.

ANDREWS AFB, Md., 1 mi. E of Camp Springs, 11 mi. SE of Washington, D. C. Hq., MATS; fighter-interceptor base, EADF, ADC; formerly Pyles Field; renamed for Lt. Gen. Frank M. Andrews, pioneer exponent of airpower, CG of US forces in Europe, killed in aircraft accident, Iceland, 1943. Housing: officers, good; airmen, fair.

ARDMORE AFB, Okla., 16 mi. NE of Ardmore. Troop carrier base, 18th AF, TAC; named for city.

ATTERBURY AFB, Ind., 3 mi. N of Columbus. Reserve training, 10th AF, ConAC; formerly Columbus AAB, renamed for Army camp for Army Brig. Gen. W. W. Atterbury, WW I transportation commander in ETO. Housing: officers, poor; airmen, poor.

BAINBRIDGE AB, Ga., 7 mi. NW of Bainbridge. Primary contract pilot training, FTAF, ATRC; named for city. Housing: officers, fair; airmen, fair.

BARKSDALE AFB, La., 1 mi. S of Bossier City, 6 mi. E of Shreveport. Hq., 2d AF, SAC; medium bomber and strategic recon base; named for Lt. Eugene H. Barksdale, WW I pilot killed near Wright Field, Ohio, Aug. 1926, while testing observation-type plane. Housing: officers, excellent; airmen, excellent.

BARTOW AB, Fla., 5 mi. NE of Bartow. Primary contract pilot training, FTAF, ATRC; named for city. Housing: officers, excellent; airmen, excellent.

BEALE AFB, Calif., 11 mi. SE of Marysville. Aviation Engineers base, 4th AF, ConAC; named for Camp Beale, for Brig. Gen. Edward F. Beale, California Indian agent before the Civil War. Housing: officers, fair; airmen, fair.

BERGSTROM AFB, Tex., 7 mi. SE of Austin. Strategic fighter base, 8th AF, SAC; formerly Del Valle AAB; renamed for Capt. John A. E. Bergstrom of Austin, killed at Clark Field, P. I., Dec. 1941, during Jap bombardment. Housing: officers, excellent; airmen, excellent.

BIGGS AFB, Tex., 6 mi. NW of El Paso. Medium bomber and tow target base, 8th AF, SAC; named for Lt. James B. Biggs, WW I fighter pilot, killed in France, 1918. Housing: officers, fair; airmen, fair.

BOLLING AFB, 3 mi. S of Washington, D. C. Hq. Command, USAF; named for Col. Raynal C. Bolling, Ass't Chief of Air Service, died saving life of a 19-year-old private near Amiens, France, 1918. Housing: officers, good; airmen, good.

BROOKLEY AFB, Ala., 3 mi. SSW of Mobile. Air Materiel Area, AMC; foreign clearing station, MATS; formerly Bates Field, renamed for Capt. Wendell H. Brookley, test pilot, killed in BT-2B crash near Bolling Field, Feb. 1934. Housing: officers, good; airmen, fair.

BROOKS AFB, Tex., 7 mi. SSE of San Antonio. Hq., USAF Security Service, ConAC; formerly Gosport Field, renamed for Lt. Sidney J. Brooks, Jr., of San Antonio, killed in air crash near Hondo, Tex., Nov. 1917, on final day of cadet training and commissioned posthumously. Housing: officers, good, airmen, good.

BRYAN AFB, Tex., 6 mi. WSW of Bryan. Basic single-engine jet pilot training; FTAF, ATRC; named for city. Housing: officers, excellent; airmen, excellent.

BURLINGTON MUNICIPAL AP, Vt., 3 mi. E of Burlington. Fighter-interceptor base, EADF, ADC; named for city.

CAMPBELL AFB, Ky., 14 mi. S of Hopkinsville. Special activities center, 2d AF, SAC; named for Fort Campbell, for Gen. William Bowen Campbell, 19th century Tennessee governor, Indian fighter, and public figure. Housing: officers, excellent; airmen, excellent.

CARSWELL AFB, Tex., 7 mi. WNW of Fort Worth. Hq., 8th AF, SAC; heavy bomber base; formerly Tarrant Field, renamed for Maj. Horace S. Carswell, Jr., of Fort Worth, WW II B-24 pilot and winner of CMH, killed in China, Oct. 1944. Housing: officers, excellent; airmen, excellent.

CASTLE AFB, Calif., 7 mi. NW of Merced. Medium bomber base, 15th AF, SAC; formerly Merced Field, renamed for Brig. Gen. Frederick W. Castle, WW II B-17 pilot and winner of CMH, killed over Germany, Dec. 1944. Housing: officers, good; airmen, good.

CHANUTE AFB, Ill., 1 mi. SE of Rantoul. Aircraft maintenance, weather, and administrative schools, TTAF, ATRC; named for Octave Chanute, aviation pioneer and navigation engineer, died in US, 1910. Housing: officers, good; airmen, good.

CHARLESTON AFB, S. C., 10 mi. N of Charleston. Troop carrier base, 18th AF, TAC; named for city.

CLINTON COUNTY AFB, Ohio, 2 mi. SE of Wilmington. Reserve combat training, 1st AF, ConAC; named geographically. Housing: officers, good; airmen, fair.

CLOVIS AFB, N. Mex., 7 mi. W of Clovis. Fighter-bomber base, 9th AF, TAC; named for city. Housing: officers, good; airmen, good.

COLUMBUS AFB, Miss., 9 mi. N of Columbus. Primary contract pilot training, FTAF, ATRC; named for city. Housing: officers, good; airmen, good.

CRAIG AFB, Ala., 5 mi. SE of Selma. Instructor pilot training, FTAF, ATRC; named for Bruce K. Craig, flight engineer for B-24 manufacturer, killed during B-24 test flight, in US, 1941. Housing: officers, good; airmen, good.

DAVIS-MONTHAN AFB, Ariz., 4 mi. SE of Tucson. Medium bomber base, 15th AF, SAC; formerly Tucson Municipal Airport, renamed for Lt. Samuel H. Davis, killed in US, 1921, and Lt. Oscar Monthan, bomber pilot, killed in Hawaii, 1924. Housing: officers, excellent; airmen, excellent.

DOBBINS AFB, Ga., 2 mi. SE of Marietta. Reserve training, 14th AF, ConAC; formerly Marietta AFB; renamed for Capt. Charles

Andrews Barksdale Brookley Brooks Carswell

Castle Dobbins Donaldson Dow Edwards

M. Dobbins, killed transporting paratroopers over Sicily, July 1943. Housing: officers, excellent; airmen, excellent.

DONALDSON AFB, S. C., 7 mi. SSE of Greenville. Hq., 18th AF, TAC, troop carrier base; formerly Greenville AFB; renamed for Maj. John O. W. Donaldson, fourth ranking US ace in WW I, killed in flying accident near Philadelphia, Sept. 1930, during aerial circus. Housing: officers, good; airmen, good.

DOVER AFB, Del., 3 mi. SE of Dover. Fighter and transport base, MATS; named for city. Housing: officers, fair; airmen, fair.

DOW AFB, Me., 2 mi. W of Bangor. Fighter base, 8th AF, SAC; formerly Bangor AB; renamed for 2d Lt. James F. Dow of Oakfield, Me., killed enroute from Mitchel Field, June 1940, in aircraft accident. Housing: officers, fair; airmen, fair.

DULUTH MUNICIPAL AP, Minn., 7 mi. NNW of Duluth. Fighter-interceptor base, CADF, ADC; formerly Williamson-Johnson AP; renamed for city. Housing: officers, good; airmen, fair.

EDWARDS AFB, Calif., 2 mi. S of Muroc. Flight test center, ARDC; formerly Muroc AFB; renamed for Capt. Glen W. Edwards, test pilot, killed at Muroc Field, June 1948, in crash of YB-49 Flying Wing. Housing: officers, good; airmen, good.

EGLIN AFB, Fla., 2 mi. SW of Valpariso. Hq., Air Proving Ground; operational suitability testing; named for Lt. Col. Frederick I. Eglin, killed in US, 1937. Housing: officers, fair, airmen, good.

ELLINGTON AFB, Tex., 16 mi. SE of Houston. Observer training, FTAF, ATRC; named for 2d Lt. Eric L. Ellington, killed during training flight near San Diego, 1913. Housing: officers, excellent; airmen, excellent.

ELLSWORTH AFB, S.D., 8 mi. NE of Rapid City. Photo recon base, 8th AF, SAC; formerly Rapid City AFB; renamed for Brig. Gen. Richard E. Ellsworth, killed in B-36 crash in Newfoundland, March 1952. Housing: officers, fair; airmen, fair.

ENT AFB, Colo., 8 mi. NE of Colorado Springs. Hq., ADC; named for Brig. Gen. Uzal G. Ent, CG, 2d AF, recipient of DSC, died in 1948. Housing: officers, fair; airmen, fair.

ETHAN ALLEN AFB, Vt., 2 mi. E of Winooski. Fighter-interceptor base, EADF, ADC; named for Revolutionary War leader of Green Mountain Boys. Housing: officers, good; airmen, good.

FAIRCHILD AFB, Wash., 11 mi. WSW of Spokane. Heavy bomber base, 15th AF, SAC; formerly Spokane AFB; renamed for Gen. Muir S. Fairchild, WW I bomber pilot, Vice Chief of Staff, USAF, died of heart attack, Washington, D.C., March 1950. Housing: officers, good, airmen, good.

FLOYD BENNETT NAS, Brooklyn, N. Y. Reserve training center, 1st. AF, ConAC, joint use with Navy; named for Admiral Byrd's pilot on first flight over North Pole, 1926. Housing: officers, fair; airmen, fair.

FORBES AFB, Kan., 7 mi. S of Topeka. Medium bomber base, replacement training center, 15th AF, SAC; formerly Topeka AAB; renamed for Maj. Daniel H. Forbes, Jr., WW II bomber pilot, killed at Muroc Field in crash of YB-49 Flying Wing, June 1948. Housing: officers, good; airmen, fair.

FOSTER AFB, Tex., 5 mi. NE of Victoria. Basic single-engine jet pilot training, FTAF, ATRC; named for 1st Lt. Arthur L. Foster of Georgetown, Tex., killed in air crash near Brooks Field, Feb. 1925. Housing: officers, fair; airmen, fair.

FRANCIS E. WARREN AFB, Wyo., 2 mi. W of Cheyenne. Engineer, weather, administrative schools, TTAF, ATRC; named for first US Senator from Wyoming, first elected governor of the state, Civil War winner of CMH, died in US, 1929. Housing: officers, excellent; airmen, fair.

GARY AFB, Tex., 5 mi. E of San Marcos. Liaison helicopter school, FTAF, ATRC; formerly San Marcos AFB; renamed for 2d Lt. A. Edward Gary, native of San Marcos and WW II B-17 co-pilot, killed at Clark Field, Philippines, Dec. 1941. Housing: officers, fair; airmen, fair.

GEIGER AFB, Wash., 6 mi. WSW of Spokane. Fighter-interceptor base, WADF, ADC; formerly Sunset Field; renamed for Maj. Harold Geiger, WW I dirigible expert, killed while crash landing at Olmsted Field, May 1927. Housing: officers, good; airmen, good.

GEORGE AFB, Calif., 6 mi. NW of Victorville. Fighter-bomber base, 9th AF, TAC; formerly Victorville AAB; renamed for Brig. Gen. Harold H. George, WW I ace, commander of US Air Forces in Australia in WW II, killed in Australia, April 1942. Housing: officers, fair; airmen, fair.

GODMAN AFB, Ky., 1 mi. NW of Fort Knox. Fighter base, 9th AF, TAC; formerly Fort Knox AAB; renamed for Lt. Kirkwood Godman, killed in US, 1918. Housing: officers, excellent; airmen, excellent.

GOODFELLOW AFB, Tex., 2 mi. SE of San Angelo. Primary pilot training school, FTAF, ATRC; named for Lt. John J. Goodfellow, Jr., of San Angelo, killed in fighter combat, France, Sept. 1918. Housing: officers, good; airmen, excellent.

GRAY AFB, Tex., 6 mi. SW of Killeen. Special activities base, 8th AF, SAC; formerly Camp Hood AAF; renamed for Capt. Robert M. Gray, pilot on first Tokyo bombing mission of WW II, killed in India, 1942. Housing: officers, excellent; airmen, excellent.

GREATER PITTSBURGH AP, Pa., 5 mi. SW of Coraopolis. Fighter-interceptor base, EADF, ADC; named for nearby city. Housing: officers, good; airmen, fair.

GREAT FALLS AFB, Mont., 4 mi. E of Great Falls. Foreign clearing station, MATS; training; named for city. Housing: officers, fair; airmen, fair.

GREENVILLE AFB, Miss., 6 mi. NE of Greenville. Basic single-engine pilot training, FTAF, ATRC; named for city. Housing: officers, fair; airmen, fair.

GRENIER AFB, N. H., 4 mi. S of Manchester. Transport base, MATS; named for 2d Lt. Jean D. Grenier of Manchester, killed in US, 1934, while in snowstorm while on air mail test run. Housing: officers, fair; airmen, fair.

GRIFFISS AFB, N. Y., 2 mi. NE of Rome. Electronics development center, ARDC; formerly Rome AB; renamed for Lt. Col. Townsend E. Griffiss of Buffalo, recipient of DSC, killed on flight from Russia to England, Feb. 1942. Housing: officers, fair; airmen, fair.

GUNTER AFB, Ala., 5 mi. NE of Montgomery. Air Command and Staff School, AU; named for William A. Gunter, mayor of

Ellington Ellsworth Ent Fairchild Forbes

Montgomery for 27 years, ardent expondent of airpower, died in 1940. Housing: officer, fair; airmen, fair.

HAMILTON AFB, Calif., 6 mi. NNE of San Rafael. Hq., 4th AF, ConAC; Hq., WADF, ADC; air rescue base, MATS; formerly Marin Meadows, renamed for 1st Lt. Lloyd A. Hamilton, recipient of DSC, killed in fighter combat, France, Aug. 1918. Housing: officers, good; airmen, good.

HARLINGEN AFB, Tex., near Harlingen. Observer training, FTAF, ATRC; named for city. Housing: officers, good; airmen, good.

HENSLEY FIELD, Tex. (Dallas NAS), 11 mi. SSW of Dallas. Troop carrier base, reserve training, Navy, joint use with TAC, ConAC; named for Maj. William N. Hensley, airpower pioneer, died in US, 1929. Housing: officers, good; airmen, good.

HILL AFB, Utah, 6 mi. S of Ogden. Hq., Air Materiel Area, AMC named for Maj. Ployer P. Hill, killed near Wright Field while testing one of first B-17s, Oct. 1935. Housing: officers, fair; airmen, fair.

HOLLOMAN AFB, N. Mex., 8 mi. SW of Alamogordo. Guided missile test base, ARDC; formerly Alamogordo AAB; renamed for Col. George V. Holloman, guided missile pioneer, killed in air crash in Formosa, March 1946. Housing: officers, fair; airmen, fair.

HONDO AB, Tex., 1 mi. NW of Hondo. Primary contract pilot

(Continued on page 90)

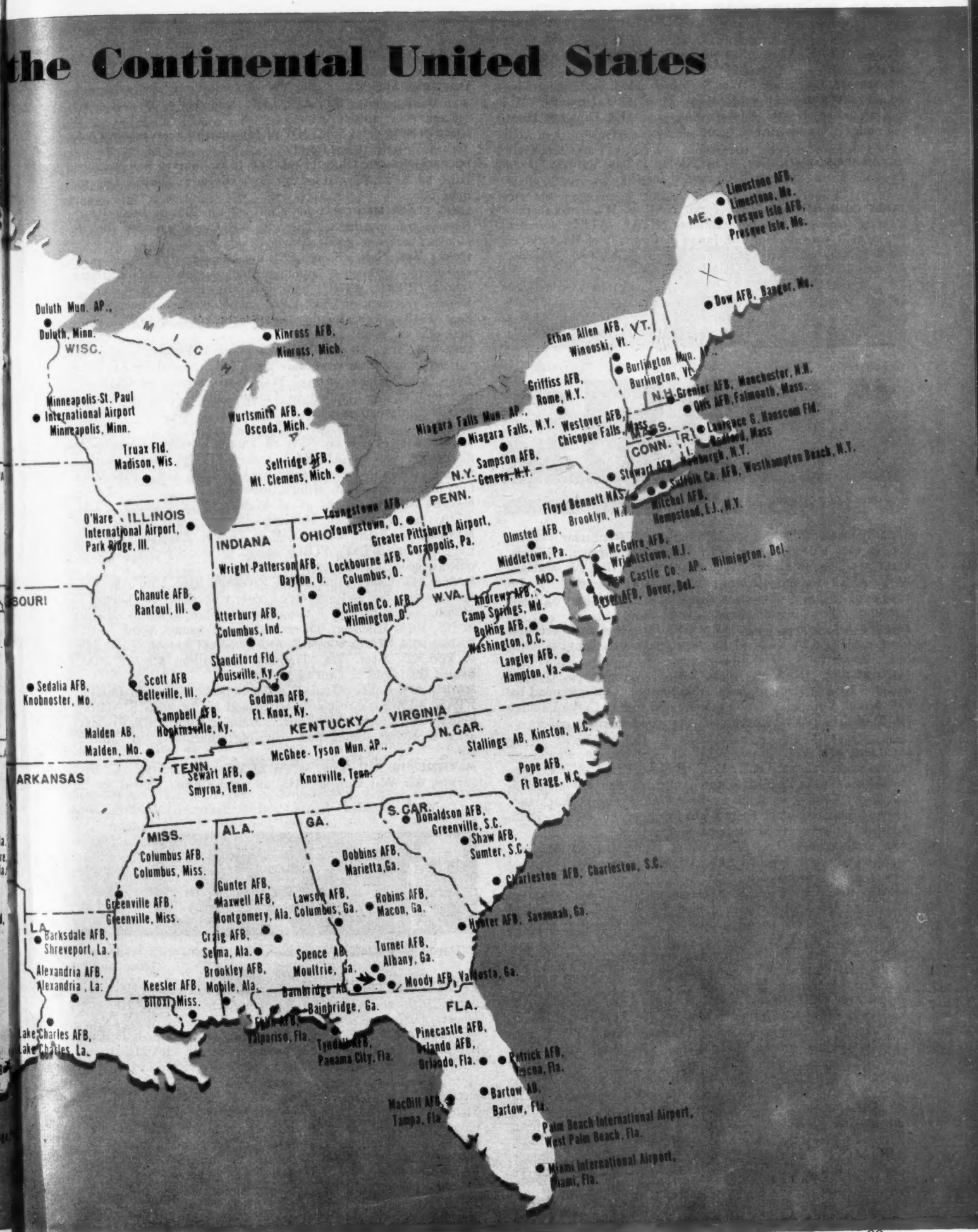
Major Active Air Force Bases in th

WASH.
MONTANA
N. DAKOTA
MINN.
ORE.
IDAHO
WYOMING
S. DAKOTA
CALIFORNIA
NEVADA
UTAH
NEBRASKA
IOWA
COLORADO
KANSAS
ARIZONA
NEW MEXICO
TEXAS
OKLA.
Paine AFB, Everett, Wash.
McChord AFB, Tacoma, Wash.
Geiger AFB, Fairchild AFB, Spokane, Wash.
Larson AFB, Moses Lake, Wash.
Portland International Airport, Portland, Ore
Great Falls AFB, Great Falls, Mont.
Mountain Home AFB, Mountain Home, Idaho
Ellsworth AFB, Rapid City, S.D.
Hamilton AFB, San Rafael, Calif.
Beale AFB, Marysville, Calif.
Stead AFB, Reno, Nev.
Parks AFB, Pleasanton, Calif.
Mather AFB, McClellan AFB, Sacramento, Calif.
Travis AFB, Fairfield, Calif.
Castle AFB, Merced, Calif.
Hill AFB, Ogden, Utah
Francis E. Warren AFB, Cheyenne, Wyo.
Sioux City AB, Sioux City, Iowa
Offutt AFB, Omaha, Neb.
Lincoln AFB, Lincoln, Neb.
Lowry AFB, Denver, Colo.
Ent AFB, Peterson Field, Colorado Springs, Colo.
Sherman AFB, Ft. Leavenworth, Kan.
Forbes AFB, Topeka, Kan.
Smoky Hill AFB, Salina, Kan.
Wichita AFB, Wichita, Kan.
Indian Springs AFB, Indian Springs, Nev.
Nellis AFB, Las Vegas, Nev.
Edwards AFB, Muroc, Calif.
George AFB, Victorville, Calif.
Oxnard AFB, Oxnard, Calif.
Long Beach Municipal Airport, Long Beach, Calif.
Norton AFB, San Bernardino, Calif
March AFB, Riverside, Calif.
Luke AFB, Phoenix, Ariz.
Yuma AFB, Yuma, Ariz.
Williams AFB, Chandler, Ariz.
Marana AB, Marana, Ariz.
Davis-Monthan AFB, Tucson, Ariz.
Kirtland AFB, Albuquerque, N. Mex.
Clovis AFB, Clovis, N. Mex.
Walker AFB, Roswell, N. Mex.
Holloman AFB, Alamogordo, N.M.
Reese AFB, Lubbock, Tex.
Biggs AFB, El Paso, Tex.
Amarillo AFB, Amarillo, Tex.
Vance AFB, Enid, Okla.
Tinker AFB, Oklahoma City, Okla.
Altus AFB, Altus, Okla.
Sheppard AFB, Wichita Falls, Tex.
Ardmore AFB, Ardmore, Okla.
Wolters AFB, Mineral Wells, Tex.
Perrin AFB, Sherman, Tex.
Carswell AFB, Ft. Worth, Tex.
Hensley Field, Dallas, Tex.
Webb AFB, Big Spring, Tex.
Pyote AFB, Monahans, Tex.
Gray AFB, Killeen, Tex.
James Connally AFB, Waco, Tex
Goodfellow AFB, San Angelo, Tex.
Bryan AFB, Bryan, Tex.
Bergstrom AFB, Austin, Tex.
Hondo AB, Hondo, Tex.
Gary AFB, San Marcos, Tex.
Ellington AFB, Houston, Tex.
Laughlin AFB, Del Rio, Tex.
Brooks AFB, Kelly AFB, Lackland AFB, Randolph AFB, San Antonio, Tex.
Foster AFB, Victoria, Tex.
Laredo AFB, Laredo, Tex.
Bombing & Gunnery Range, Port O'Connor, Tex.
Harlingen AFB, Harlingen, Tex.

An *AIR FORCE* Magazine Map

R.L.Burleigh

in the Continental United States



training, FTAF, ATRC; named for city. Housing: officers, fair; airmen, fair.

HUNTER AFB, Ga., 3 mi. SW of Savannah. Medium bomber base, 2d AF, SAC; named for Maj. Gen. Frank O'D. Hunter, WW I ace, recipient of DSC, four clusters; past AFA Director. Housing: officers, good, airmen, good.

INDIAN SPRINGS AFB, Nev., 1 mi. NW of Indian Springs. Special weapons testing base, ARDC; named for city.

JAMES CONNALLY AFB, Tex., 7 mi. NNE of Waco. Basic pilot training, observer intercept training, FTAF, ATRC; formerly Waco AFB; renamed for Col. James T. Connally of Waco, killed on B-29 mission over Yokohama, Japan, May 1945. Housing: officers, excellent; airmen, excellent.

KEESLER AFB, Miss., 2 mi. WNW of Biloxi. Electronics, communications, radar, and administrative schools, TTAF, ATRC; named for Lt. Samuel R. Keesler, Jr., of Greenwood, Miss.,

Gary George Gray Grenier Hamilton

aerial observer, killed on special bombing mission near Verdun, France, Oct. 1918. Housing: officers, excellent; airmen, excellent.

KELLY AFB, Tex., 6 mi. WSW of San Antonio. Hq., Air Materiel Area, AMC; foreign clearing station, MATS; named for Lt. George E. M. Kelly, pioneer Army pilot, killed in US, 1911. Housing: officers, good; airmen, good.

KINROSS AFB, Mich., 3 mi. SE of Kinross. Fighter-interceptor base, EADF, ADC; named for nearby city. Housing: officers, fair; airmen, fair.

KIRTLAND AFB, N. Mex., 4 mi. SSE of Albuquerque. Special weapons base, ARDC; formerly Albuquerque AAB; renamed for Col. Roy S. Kirtland, aviation pioneer and former CO of Langley Field, died in 1941. Housing: officers, good; airmen, good.

LACKLAND AFB, Tex., 7 mi. WSW of San Antonio. Processing center, basic training, OCS, WAF training, TTAF, ATRC; Hq., Human Resources Research Center; formerly San Antonio Aviation Cadet Center; renamed for Brig. Gen. Frank D. Lackland, former Commandant of Kelly Field flying school, died in 1943. Housing: officers, excellent; airmen, excellent.

LAKE CHARLES AFB, La., 3 mi. E of Lake Charles. Medium bomber and recon base, 2d AF, SAC; named for city. Housing: officers, good; airmen, fair.

LANGLEY AFB, Va., 3 mi. N of Hampton. Hq., TAC; air crew school; fighter-bomber base; named for Samuel P. Langley, pioneer aeronautical scientist, died in 1906. Housing: officers, good; airmen, good.

LAREDO AFB, Tex., on Rio Grande, near Laredo. Basic single-engine pilot training, FTAF, ATRC; named for city. Housing: officers, good; airmen, good.

LARSON AFB, Wash., 6 mi. NNW of Moses Lake. Troop carrier base, 18th AF, TAC; formerly Moses Lake AFB; renamed for Maj. Donald A. Larson, native of Yakima, Wash., WW II ace, killed on fighter mission over Ulzen, Germany, Aug. 1944. Housing: officers, poor; airmen, poor.

LAUGHLIN AFB, Tex., 7 mi. E of Del Rio. Air service base, ARTC; named for Lt. Jack T. Laughlin, pilot killed in action in Far East, 1942. Housing: officers, fair; airmen, fair.

LAURENCE G. HANSCOM FIELD, Mass., 1 mi. SSW of Bedford. Electronics research center, ARDC; fighter-interceptor base, EADF, ADC; formerly Bedford AFB; renamed for Laurence Hanscom, Boston and Worcester newspaperman, Army reserve pilot, killed near base, 1941.

LAWSON AFB, For Benning, Ga., 7 mi. S of Columbus. Troop carrier base, 18th AF, TAC; named for Capt. Walter R. Lawson, WW I pilot, killed in aircraft accident at McCook (now Wright-Patterson) Field, 1923. Housing: officers, good; airmen, good.

LIMESTONE AFB, Me., 2 mi. NW of Limestone. Heavy bomber and staging base, 8th AF, SAC; named for city. Housing: officers, poor; airmen, poor.

LINCOLN AFB, Neb., 5 mi. NW of Lincoln. Medium bomber base, 15th AF, SAC; named for city.

LOCKBOURNE AFB, Ohio, 11 mi. SSE of Columbus. Bomber recon base, 2d AF, SAC; named for city. Housing: officers, fair; airmen, fair.

LONG BEACH MUNICIPAL AP, Calif., 3 mi. NE of Long Beach. Reserve training, fighter base, 4th AF, ConAC; named for city. Housing: officers, good; airmen, good.

LOWRY AFB, Colo., 5 mi. ESE of Denver. Flexible gunnery, armament, ordnance, photographic, supply, administrative schools, TTAF, ATRC; named for Lt. Francis B. Lowry of Denver, recipient of DSC, killed on photo mission over France, Sept. 1918; only Colorado airman to be killed in WW I. Housing: officers, good; airmen, good.

LUKE AFB, Ariz., 20 mi. WNW of Phoenix. Fighter-bomber advanced training; air crew training; ATRC; named for Lt. Frank Luke, Jr., "balloon-busting" WW I ace, winner of CMH and recipient of DSC, killed in France, 1918. Housing: officers, excellent; airmen, excellent.

MacDILL AFB, Fla., 8 mi. SSW of Tampa. Medium bomber and air rescue base, 2d AF, SAC; named for Col. Leslie MacDill, fighter pilot, killed in air crash at Anacostia, Md., 1938. Housing: officers, excellent; airmen, excellent.

MALDEN AB, Mo., 4 mi. N of Malden. Pilot training, FTAF, ATRC; named for city. Housing: officers, good; airmen, good.

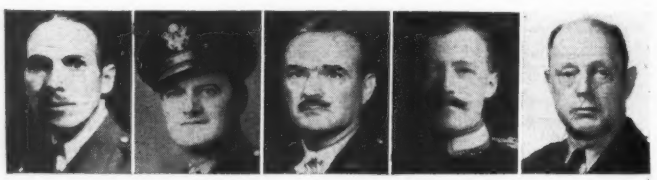
MARANA AB, Ariz., 35 mi. NW of Tucson. Basic single-engine pilot training, FTAF, ATRC; named for nearby city. Housing: officers, good; airmen, good.

MARCH AFB, Calif., 9 mi. SE of Riverside. Hq., 15th AF, SAC; medium bomber and air rescue base; named for Lt. Peyton C. March, Jr., son of WW I Army Chief of Staff, killed in air crash in US, 1918. Housing: officers, excellent; airmen, good.

MATAGORDA ISLAND BOMBING AND GUNNERY RANGE, 9 mi. SSW of Port O'Conner, Tex. Training installation, 8th AF, SAC; named for island in Gulf of Mexico.

MATHER AFB, Calif., 10 mi. E of Sacramento. Observer training, FTAF, ATRC; air rescue base; named for Lt. Carl S. Mather, killed near Ellington Field during training flight, 1918, five days after receiving commission. Housing: officers, good; airmen, good.

MAXWELL AFB, Ala., 3 mi. WNW of Montgomery. Hq., Air University; Air War College, AU; air rescue base; named for 2d



Hill Holloman Hunter Kelly Lackland

Lt. William C. Maxwell of Natchez, killed on Luzon, Philippines, Aug. 1920, while attempting emergency landing. Housing: officers, fair; airmen, fair.

McCHORD AFB, Wash., 8 mi. S of Tacoma. Fighter-interceptor base, WADF, ADC; air rescue base, foreign clearing station, MATS; named for Col. William C. McChord, killed in US, 1937. Housing: officers, excellent; airmen, excellent.

McCLELLAN AFB, Calif., 10 mi. NE of Sacramento. Hq., Air Materiel Area, AMC; named for Maj. Hezekiah McClellan, pioneer in arctic aeronautical experiments, killed in test flight of new plane, US, 1936. Housing: officers, good; airmen, fair.

McGHEE-TYSON MUNICIPAL AP, Tenn., 12 mi. SSW of Knoxville. Fighter-interceptor base, CADF, ADC; named for Charles McGhee Tyson, WW I flyer whose family donated land for the airport. Housing: officers, good; airmen, good.

McGUIRE AFB, Fort Dix, N. J., 1 mi. SE of Wrightstown. Fighter-

interceptor base, EADF, ADC; formerly Fort Dix AAB, renamed for Maj. Thomas B. McGuire, Jr., of Ridgewood, N. J., 2d ranking WW II ace, P-38 pilot, winner of CMH, recipient of DSC, killed over Leyte, P. I., 1945. Housing: officers, fair; airmen, fair.

MIAMI INTERNAT'L AP, Fla., 5 mi. NW of Miami. Reserve training; troop carrier base, 18th AF, TAC; named for city. Housing: officers, excellent; airmen, excellent.

MINNEAPOLIS-ST. PAUL INTERNAT'L AP, Minn., 7 mi. SSE of Minneapolis. Fighter-interceptor base, CADF, ADC; formerly Wold Chamberlain Field, renamed for twin cities. Housing: officers, good; airmen, fair.

MITCHEL AFB, N. Y., 2 mi. NE of Hempstead, L. I. Hq., ConAC; Hq., 1st AF; named for Maj. John P. Mitchel, first Fusion mayor of NYC, fighter pilot, killed in air crash in Louisiana, July 1918. Housing: officers, fair; airmen, fair.

MOODY AFB, Ga., 12 mi. NNE of Valdosta. Advance flying and instrument training, CTAF, ATRC; named for Maj. George P. Moody, fighter pilot, killed in US, 1941. Housing: officers, good; airmen, fair.

MOUNTAIN HOME AFB, Idaho, 11 mi. WSW of Mountain Home. Bomber training base, SAC; named for city. Housing: officers, fair; airmen, fair.

NELLIS AFB, Nev., 8 mi. NE of Las Vegas. Air crew school, gunnery school, CTAF, ATRC; formerly Las Vegas AFB, renamed for Lt. William H. Nellis, of Las Vegas, fighter pilot, killed in action over Luxembourg, Dec. 1944. Housing: officers, fair; airmen, fair.

NEW CASTLE CO. AP, Del., 5 mi. SW of Wilmington. Fighter-interceptor base, EADF, ADC; named geographically. Housing: officers, good; airmen, good.

NIAGARA FALLS MUNICIPAL AP, N. Y., 4 mi. E of Niagara Falls. Fighter-interceptor base, EADF, ADC; named for city. Housing: officers, fair; airmen, fair.

NORTON AFB, Calif., 5 mi. ESE of San Bernardino. Hq., Air Materiel Area, AMC; formerly San Bernardino Air Depot, renamed for Capt. Leland F. Norton, bomber pilot killed near Amiens, France, May 1944. Housing: officers, excellent; airmen, excellent.

OFFUTT AFB, Neb., 9 mi. S of Omaha. Hq., SAC; named for 1st Lt. James Jarvis Offutt, killed in fighter action, France, 1918. Housing: officers, good; airmen, good.

O'HARE INTERNAT'L AP, Ill., 15 mi. NW of Chicago, Fighter-interceptor base, EADF, ADC; reserve training; formerly Douglas Airport; renamed for Lt. Cmdr. Edward H. O'Hare of Chicago, Navy pilot in WW II, winner of CMH, killed in action near Tarawa in the Pacific, 1943. Housing: officers, fair; airmen, fair.

OLMSTED AFB, Pa., 1 mi. NW of Middletown. Hq., Air Materiel Area, air freight terminal, AMC; formerly Middletown Air Depot, renamed for Lt. Robert S. Olmsted, balloon pilot, killed when his balloon was struck by lightning over Belgium, Sept. 1923. Housing: officers, good; airmen, good.

ORLANDO AFB, Fla., 2 mi. E of Orlando. Hq., Air Photographic and Charting Service, MATS; named for city. Housing: officers, excellent; airmen, excellent.

OTIS AFB, Mass., 9 mi. NNE of Falmouth. Fighter-interceptor base, EADF, ADC; air rescue base; named for Lt. Frank J. Otis, killed in air crash in US, 1937. Housing: officers, good; airmen, good.

OXNARD AFB, Oxnard, Calif. Special activities base, ADC; named for city. Housing: officers, fair; airmen, fair.

PAINE AFB, Wash., 6 mi. S of Everest. Fighter-interceptor base, WADF, ADC; named for 2d Lt. Topliff O. Paine, air mail pilot, killed in US while mapping air mail routes, 1922. Housing: officers, good; airmen, good.

PALM BEACH INTERNAT'L AP, Fla., 2 mi. W of West Palm Beach. Transport base, MATS; formerly Morrison Field, renamed for city. Housing: officers, excellent; airmen, good.

PARKS AFB, Calif., Pleasanton, 28 mi. E of Oakland. Indoctrination training, TTAF, ATRC; overseas replacement depot; formerly Camp Shoemaker (Navy), renamed for Adm. Charles W. Parks, naval engineer. Housing: officers, excellent; airmen, good.

PATRICK AFB, Fla., 12 mi. SE of Cocoa. Pilotless aircraft test center, ARDC; formerly Banana River NAS, renamed for Maj. Gen. Mason M. Patrick, Chief of Army Air Service during and after WW I, died in US, Jan. 1942. Housing: officers, excellent; airmen, excellent.

PERRIN AFB, Tex., 6 mi. NNW of Sherman. Fighter-interceptor training, CTAF, ATRC; named for Lt. Col. Elmer D. Perrin of Boerne, Tex., killed testing a B-26 near Baltimore, June 1941. Housing: officers, fair; airmen, fair.

PETERSON FIELD, Colo., 6 mi. E of Colorado Springs. Administrative flying, ADC; named for 1st Lt. Edward J. Peterson, killed in US, in airplane crash, 1942.

PINECASTLE AFB, Fla., 7 mi. S of Orlando. Medium bomber training, CTAF, ATRC; named for nearby city. Housing: officers, excellent; airmen, good.

POPE AFB, Fort Bragg, N. C., 12 mi. W of Fayetteville. Hq., 9th AF, TAC; named for 1st Lt. Harley H. Pope, killed while making a forced landing in a Jenny in South Carolina, Jan. 1919. Housing: officers, good; airmen, good.

Larson Lowry Luke MacDill Maxwell

McGuire Mitchel Norton Olmsted Patrick

PORTLAND INTERNAT'L AP, Ore., 5 mi. NNE of Portland. Fighter-interceptor base, WADF, ADC; troop carrier base; named for city. Housing: officers, excellent; airmen, good.

PRESQUE ISLE AFB, Me., 1 mi. NW of Presque Isle. Fighter-intercepter base, EADF, ADC; named for city. Housing: officers, good; airmen, good.

PYOTE AFB, Tex., 1 mi. SW of Pyote, near Monahans. Aircraft storage, AMC; named for city. Housing: officers, fair; airmen, fair.

RANDOLPH AFB, Tex., 15 mi. ENE of San Antonio. Medium bomber training, CTAF, ATRC; School of Aviation Medicine; named for Capt. William M. Randolph of Austin, fighter pilot, killed in aircraft accident in Texas, 1928. Housing: officers, excellent; airmen, good.

REESE AFB, Tex., 12 mi. W of Lubbock. Multi-engine pilot training, FTAF, ATRC; formerly Lubbock AFB, renamed for Lt. Augustus F. Reese, Jr., of Shallowater, Tex., killed on bomber mission over Cagliari, Italy, May 1943. Housing: officers, good; airmen, good.

ROBINS AFB, Ga., 14 mi. SSE of Macon. Hq., 14th AF, ConAC; Hq., Air Materiel Area, AMC; named for Brig. Gen. Augustine Warner Robins, chief, Materiel Division, Air Corps, who devised system of cataloging in 1920's still used; died in 1940. Housing: officers, fair; airmen, good.

SAMPSON AFB, N. Y., near Geneva. Processing center, basic training, TTAF, ATRC; former Navy base named for Rear Adm. William T. Sampson, Atlantic Fleet commander in Spanish-American War, died in 1902. Housing: officers, good; airmen, fair.

SCOTT AFB, Ill., 6 mi. ENE of Belleville. Hq., ATRC; communications school; named for Cpl. Frank S. Scott, first enlisted man to die in an air accident, killed at College Park, Md., 1912. Housing: officers, good; airmen, good.

SEDALIA AFB, Mo., 3 mi. S of Knobnoster. Air services base, 2d AF, SAC; named for nearby city. Housing: officers, fair; airmen, fair.

(Continued on page 93)

something to think about

Peace in our time depends upon plenty of *this* sort of thing:

"We were given a map," said the man from Martin, "and a target to be destroyed. Problem was to produce the hardware—the optimum weapons system to destroy that target."

That's as far as he would go. Except to say this:

It looks like nothing ever flown by man. Pilotless. Can be launched from a pad of scorched earth. A team of Martin scientists and engineers in five branches of aeronautical engineering produced this thing in a matter of months from problem to proving ground.

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SELFRIDGE AFB, Mich., 3 mi. E of Mount Clemens. Hq., 10th AF, ConAC; fighter-interceptor base, EADF, ADC; air rescue base; named for Lt. Thomas E. Selfridge, killed in 1908 demonstrating Wright Brothers' plane for government. Housing: officers, good; airmen, good.

SEWART AFB, Tenn., 3 mi. N of Smyrna. Troop carrier base, 18th AF, TAC; formerly Smyrna AAB, renamed for Maj. Allan J. Sewart, Jr., bomber pilot, recipient of DSC, killed in action over the Solomons, Nov. 1942. Housing: officers, excellent; airmen, excellent.

SHAW AFB, S. C., 7 mi. WNW of Sumter. Tactical recon crew replacement, 9th AF, TAC; named for 1st Lt. Erwin D. Shaw of Sumter, killed during recon flight over German lines, July 1918, while serving with Royal Flying Corps. Housing: officers, excellent; airmen, excellent.

SHEPPARD AFB, Tex., 6 mi. N of Wichita Falls. Aircraft maintenance school, TTAF, ATRC; named for Morris E. Sheppard, US Senator from Texas, chm. Senate Military Affairs Committee, who died in 1941. Housing: officers, fair; airmen, fair.

Perrin Randolph Reese Scott Tinker

SHERMAN AFB, Kan., 1 mi. NNE of Fort Leavenworth. Air services base, 10th AF, ConAC; named for Maj. William C. Sherman, instructor at Command and Staff School, died in 1927. Housing: officers, good; airmen, excellent.

SIOUX CITY AB, Iowa, 10 mi. S of Sioux City. Fighter-interceptor base, CADF, ADC; named for city. Housing: officers, fair; airmen, fair.

SMOKY HILL AFB, Kan., 4 mi. SW of Salina. Medium bomber base, 15th AF, SAC; named for geographical area. Housing: officers, good; airmen, good.

SPENCE AB, Ga., near Moultrie. Primary contract pilot training, FTAF, ATRC; named for Lt. Thomas L. Spence of Thomasville, Ga., WW I pilot, killed in aircraft accident at end of war. Housing: officers, good; airmen, good.

STALLINGS AB, N. C., 5 mi. NW of Kinston. Primary contract pilot training, FTAF, ATRC; formerly Kinston-Lenoir Co. Airport, renamed for Lt. Harry F. Stallings, Jr., B-29 navigator, killed in action in Pacific, April 1945; and his brother, Lt. June Bruce Stallings, P-51 pilot, killed over Germany, March 1945.

STANDIFORD FIELD, Ky., 4 mi. SSE of Louisville. Reserve training, 1st AF, ConAC; named locally. Housing: officers, good; airmen, good.

STEAD AFB, Nev., 10 mi. NW of Reno. Special activities base, 15th AF, SAC; named locally. Housing: officers, fair; airmen, fair.

STEWART AFB, N. Y., 4 mi. NW of Newburgh. Hq., EADF, ADC; fighter-interceptor base; named for Lachlan Stewart, sea captain whose father provided the original land for the base. Housing: officers, fair; airmen, fair.

SUFFOLK CO. AFB, N. Y., 3 mi. N of Westhampton Beach, L. I. Fighter-interceptor base, EADF, ADC; named for geographical area. Housing: officers, fair; airmen, fair.

TINKER AFB, Okla., 8 mi. SE of Oklahoma City. Hq., Air Materiel Area, AMC; air freight terminal; named for Maj. Gen. Clarence L. Tinker, a Pawhuska Indian, bomber and fighter pilot, CG, 7th AF, killed in Battle of Midway, June 1942. Housing: officers, good; airmen, good.

TRAVIS AFB, Calif., 6 mi. ENE of Fairfield and Suisun. Long range strategic recon base, 15th AF, SAC; foreign clearing station, MATS; formerly Fairfield-Suisun AFB, renamed for Brig. Gen. Robert F. Travis, bomber pilot, recipient of DSC, killed in B-29 crash in US, Aug. 1950. Housing: officers, good; airmen, good.

TRUAX FIELD, Wis., 1 mi. E of Madison. Fighter-interceptor base, CADF, ADC; named for 1st Lt. Thomas L. Truax of Madison, pilot killed in training flight in US, Nov. 1941. Housing: officers, fair; airmen, fair.

TURNER AFB, Ga., 4 mi. ENE of Albany. Strategic fighter base, 2d AF, SAC; named for Lt. Sullins Preston Turner of Oxford, Ga., killed in aircraft accident at Langley AFB, May 1940. Housing: officers, poor; airmen, poor.

TYNDALL AFB, Fla., 8 mi. SE of Panama City. Aircraft control and fighter-interceptor training, CTAF, ATRC; Air Police school; named for Lt. Frank B. Tyndall of Pt. Seward, Fla., WW I fighter pilot, killed in air crash, 1930, first Florida military flyer to be killed. Housing: officers, good; airmen, good.

VANCE AFB, Okla., 4 mi. SSW of Enid. Basic multi-engine pilot training, light bomber transition, FTAF, ATRC; formerly Enid AAB, renamed for Lt. Col. Leon R. Vance, Jr., WW II winner of CMH, lost in hospital aircraft when forced down at sea off Iceland, 1944. Housing: officers, excellent; airmen, excellent.

WALKER AFB, N. Mex., 6 mi. S of Roswell. Medium bomber base, 8th AF, SAC; formerly Roswell AAF, renamed for Brig. Gen. Kenneth N. Walker, a native of New Mexico, CG, 5th Bomber Command, WW II winner of CMH, killed in Southwest Pacific while leading a bombing attack, 1943. Housing: officers, good; airmen, good.

WEBB AFB, Tex., near Big Spring. Advance single-engine pilot training, FTAF, ATRC; formerly Big Spring AFB, renamed for 1st Lt. James L. Webb, Jr., F-51 pilot, killed off Japanese coast, 1949. Housing: officers, good; airmen, good.

WESTOVER AFB, Mass., 3 mi. NNE of Chicopee Falls. Hq., Atlantic Division, MATS; air rescue base; foreign clearing station; named for Maj. Gen. Oscar Westover, Chief of Air Corps, killed in air crash near Burbank, Calif., Sept. 1938. Housing: officers, good; airmen, good.

WICHITA AFB, Kan., 5 mi. SE of Wichita. Medium bomber crew training, CTAF, ATRC; named for city. Housing: officers, good; airmen, fair.

Travis Vance Walker Wright, O. Wright, W.

WILLIAMS AFB, Ariz., 10 mi. E of Chandler. Basic single-engine pilot training, FTAF, ATRC; jet pilot training; formerly Higley Field, renamed for Lt. Charles L. Williams, native of Arizona, bomber pilot, killed in Hawaii, July 1927. Housing: officers, excellent; airmen, excellent.

WOLTERS AFB, Tex., 3 mi. W of Mineral Wells. Hq., Aviation Engineer Force, ConAC; formerly Camp Wolters, named for Brig. Gen. Jacob F. Wolters of Houston, founder and CO of Texas National Guard Cavalry. Housing: officers, fair; airmen, fair.

WRIGHT-PATTERSON AFB, Ohio, 2 mi. ENE of Dayton. Hq., AMC; WADC; USAF Institute of Technology; formerly separate areas including Fairfield Air Depot, Wilbur Wright Field and McCook Field, and Patterson Field; now named for Orville and Wilbur Wright, and Lt. Frank S. Patterson, killed in air crash near this base during early tests of synchronized machine gun firing, June 1918. Housing: officers, good; airmen, excellent.

WURTSMITH AFB, Mich., 3 mi. NW of Oscoda. Fighter-interceptor base, EADF, ADC; formerly Camp Skeel, later Oscoda AFB, renamed for Maj. Gen. Paul B. Wurtsmith, CG, 13th AF, killed in B-25 crash in North Carolina, 1946. Housing: officers, excellent; airmen, excellent.

YOUNGSTOWN AFB, Ohio, 10 mi. N of Youngstown. Fighter-interceptor base, EADF, ADC; named for city.

YUMA AFB, Ariz., 7 mi. SE of Yuma. Weapons training center, ADC; named for city. Housing: officers, good; airmen, good.

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1. LOW INITIAL COST—The CRC 102-A is one of the lowest priced, large scale, digital electronic computers now available commercially. It may be purchased, rented, or leased with an option to buy. Performance guarantees are given as part of every lease contract.

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3. WIDE CHOICE OF INPUT-OUTPUT DEVICES—Data in either octal or decimal form may be entered into the CRC 102-A manually from a typewriter, automatically or semi-automatically from punched paper tape, and automatically from IBM cards or from computer-controlled magnetic-tape units.

The computer will print output data automatically on its typewriter in octal, decimal, or alphabetic form, perforate paper tape in octal or decimal form for reproducing hard copy or for re-entering data into the computer at some later time, punch octal or decimal data on IBM cards for use with punched card equipment, or record data on magnetic tape for later use.

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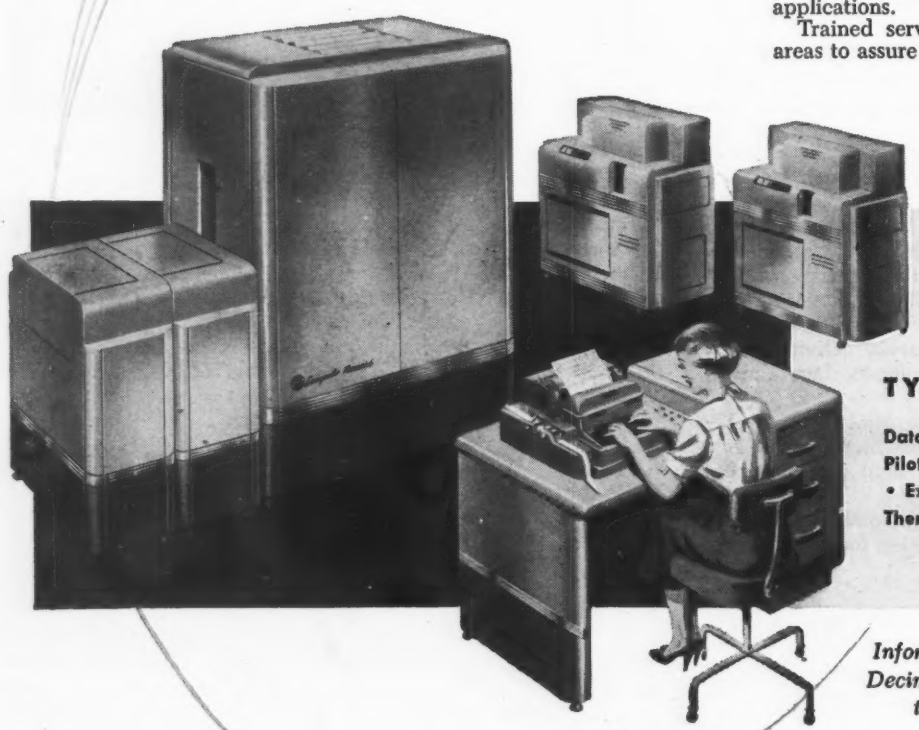

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SPARE PARTS HEADACHES

You can't keep airplanes in the air without 'em but which and how many is tough to figure

By C. Carroll High, Jr.

PARTS!"

The burly crew chief made it sound like a swear word.

The little airman in the supply room (they called him "Prof.") looked up. "What's the beef, Sarge?" he asked, just as if he didn't know what was coming.

"I spend more time running up here for parts than I do on the job," said Sarge.

"So what should I do?" the Prof. shrugged. "Follow you around with a handful of parts?"

"Not only that. Half the time you don't have what I want," the chief continued.

"Hey, wait a minute." The Prof. began to rile up a little. "How long have you had to wait for parts? Give me an honest answer. Only once did it ever take until the next day."

The crew chief backed water. "But I shouldn't have to wait at all. You ought to keep those bins full."

"Sarge, let me tell you something," the Prof. said firmly. "If you knew how much work went into getting each part in those bins for you, you'd salute from a kneeling position."

The Prof. settled himself comfortably on the counter. He was going to talk for a while.

"Did you know," he asked, "that every time the Air Force spends a dollar for an airplane and equipment that goes on it, it spends another thirty cents on spares and spare parts?"

The crew chief yawned but kept quiet. He knew he wouldn't get his parts until the Prof. was through.

"As a matter of fact, between July 1, 1951, and June 30, 1953, the Air Force had $31.25 billion to spend for aircraft and related equipment. Out of that came $9.25 billion for spares and spare parts.

"You know how much a billion dollars is? It takes more than 250 one-dollar bills to make a stack an inch high. A billion dollars would make a stack sixty miles high—almost five times as high as man has gone.

"Buying spares and spare parts is a terrific job. Just predicting how many we need, ordering them and getting them to us when we need them is a minor miracle. While we're waiting for that shipment to come in, let me tell you a few things.

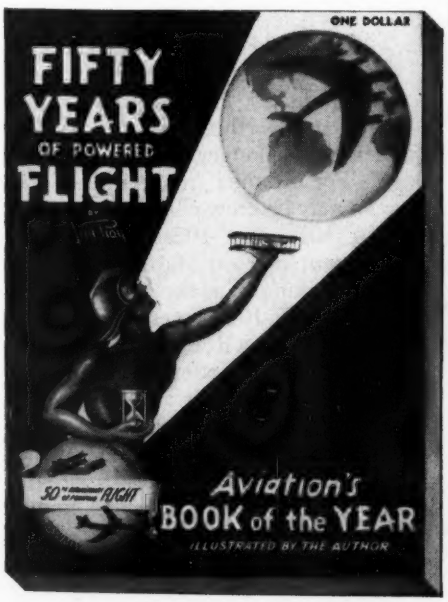
"Look at it this way. Did you ever try to get a part from your auto dealer and have him tell you he was 'fresh out'?"

The crew chief allowed as how that had happened oftener than he cared to remember.

"So you were sore. But do you have any idea what the auto manufacturer has to do to see that you get the parts you want when you want them? How do you suppose you can get your car serviced and repaired anywhere in the country no matter where you bought it?

"For instance, suppose a company

(Continued on following page)



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In this colorful, 128-page book, with 300 illustrations, Jim Ray, noted aviation consultant, writer, illustrator and historian, has concisely and accurately portrayed the fabulous story of first Fifty Years of powered Flight.

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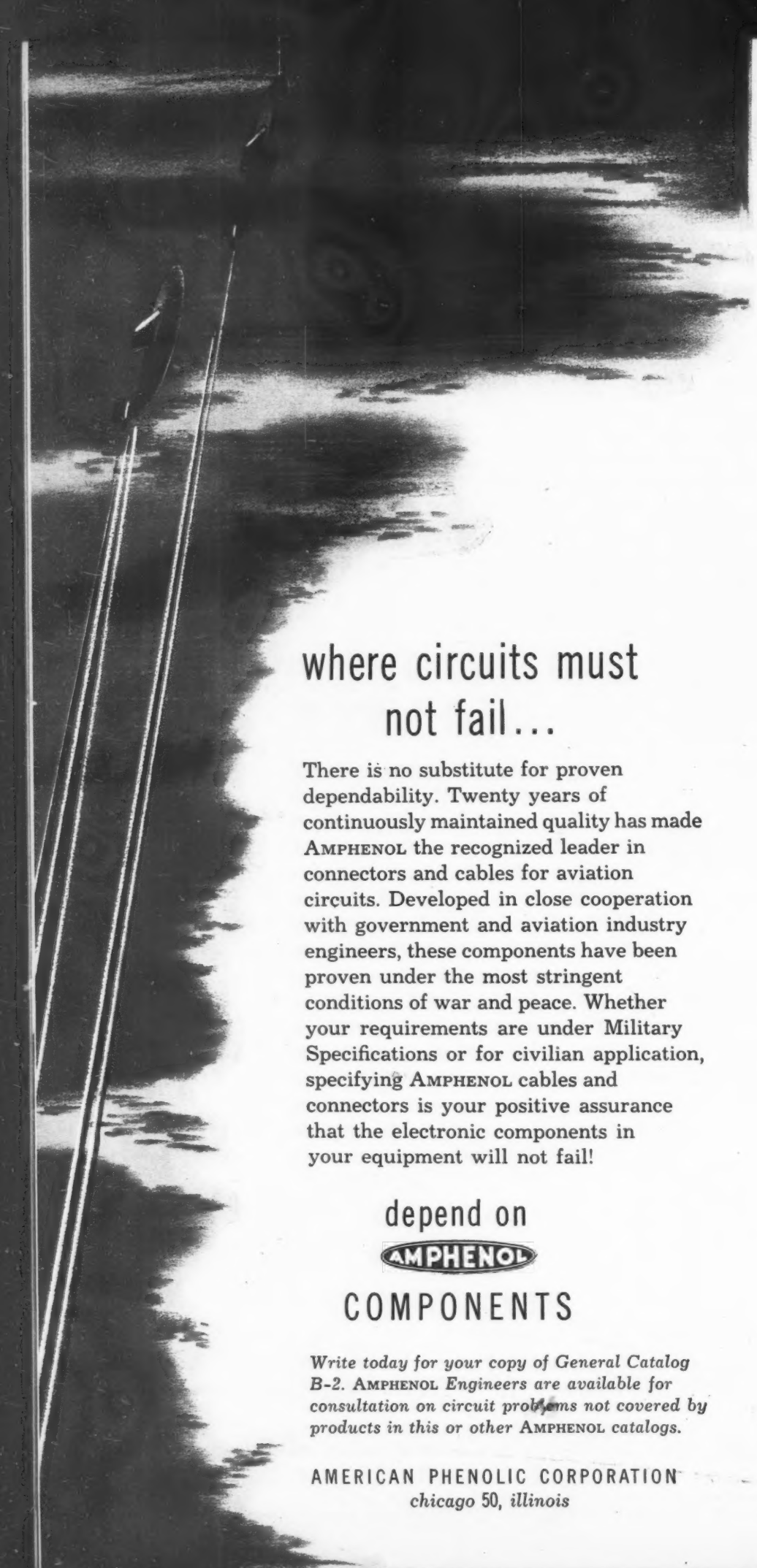

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developed an automatic jack that would work just by pressing a button on the dash. They couldn't put it on a car before 1956 or 1957.

"To start with, they'd have to figure out how many motorists would rather spend 100 or 200 dollars than crank up a hand jack.

"Then they'd have to service-test a model to find out which parts wore out fastest. They'd have to allow for special tools to service the new gimmick and to teach guys like you to maintain them. Once they knew all these things, they could start placing their orders, timing each one so they'd have a new jack for each new car—no more, no less.

"So, by the time they were ready to sell the first car, all the dealers would have the special tools and the spare parts for the new device, all distributed according to the anticipated demand.

"Sounds a lot like by-guess-and-by-gosh, and maybe it is. Any time during those two or three years of planning, things might get out of whack and you may blow your top because you can't get that part. But they don't want you to go away mad; they want you for a steady customer. When you're mad, they're madder because they figured wrong somewhere.

"The Air Force has the same problem, except you can multiply by ten thousand. Planning doesn't cover only two or three years. Sometimes it is much longer.

"For instance, in a couple of years you may be crew chief on a squadron of F-101s, or F-102s. But right now the people at Air Materiel Command are working to make sure that when that first F-101 comes into your tender care, you'll have spare parts—plus the instruction books on how to diagnose trouble and fix it.

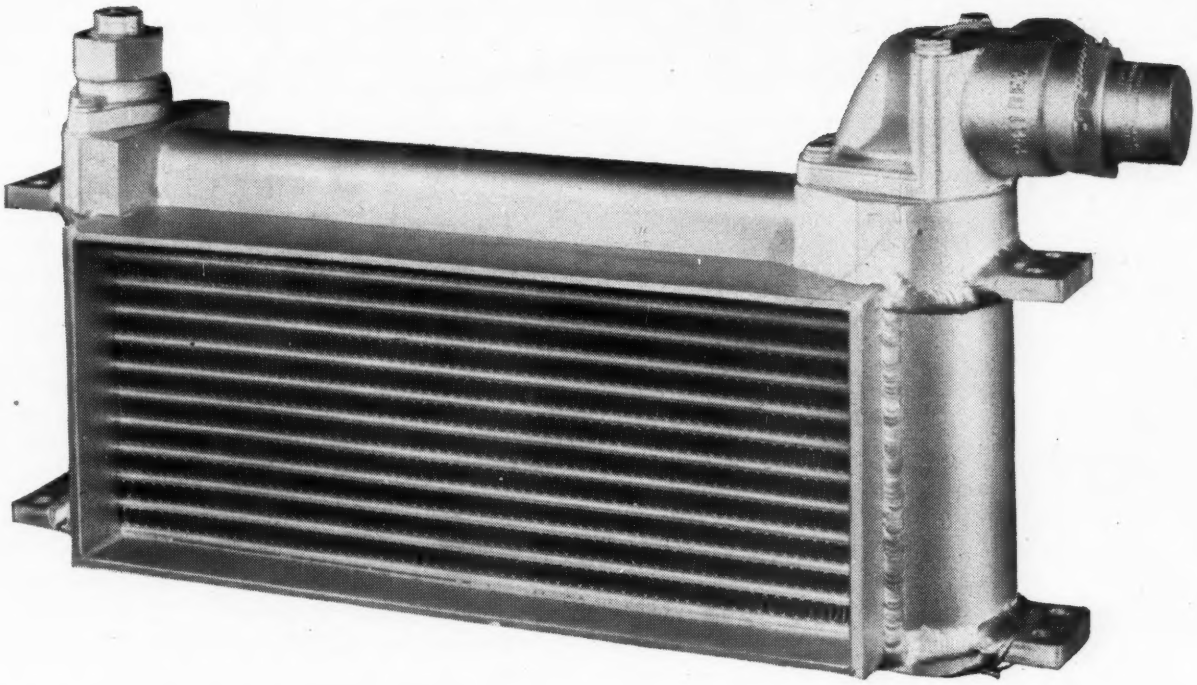
"The big spare parts problems come from changes in program and mission as the world situation changes; design changes; number and types of planes; life expectancy of the parts; pipeline time; lead time, and, probably most important, money.

"Do you know why our airplanes are good? Because our engineers never call any plane perfect. They're always looking for something to make it faster, better, safer or cheaper. They hate to freeze a design. But they have to or they can never produce it.

"That doesn't mean it will stay frozen. Planes are modified and modifications mean changes in spare

(Continued on page 99)

Designed and built to do a better job



Harrison aluminum plate-type oil coolers are light in weight, compact in design to fit almost any space, and perform efficiently under all operating conditions.

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A quality product that is the result of more than 40 years' experience in the design and manufacture of heat exchange equipment, the Harrison aviation oil cooler has wide use—for cooling hydraulic system fluid, cooling helicopter engine and gearbox oil, cooling turbojet and turboprop compressor bearings and turbine bearing lube oil. Manufacturers of aircraft and airframes are invited to write for detailed performance data.

HARRISON RADIATOR DIVISION

GENERAL MOTORS CORPORATION, LOCKPORT, NEW YORK

HARRISON

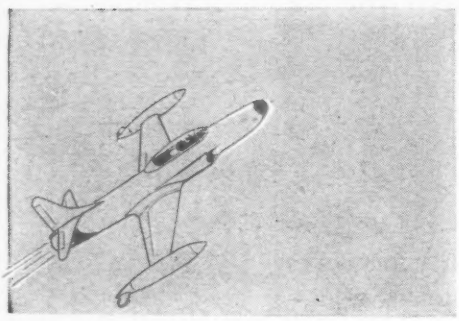
Stung by the tail of a scorpion . . .

Stung by the tail of a scorpion
Gravity loosens its grip
On the hide of a hellion
Who scorches the sky
Through a curve of silence
While sound is a laggard
In the tangled air.

The monster with open mouth
Sucks food from runnels of light
Washing blue space
Through a furious gut.

Tiptoe on the flattened world
The watchers are asking their eyes
If a dragon that swallows flame
Can burrow a hole
In the sagging roof of the morning.

Upon a ladder of smoke
The monster touches the zenith
But gravity roused from its spell
Reaches toward rafters of sunlight
And drags the scorpion down
To a crevice of earth.



Jet Plane — from "Incident in Silver", by A. M. Sullivan (*by permission*).

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parts. That's why we sometimes get up to our ears in nice, brand new parts that we never use. They get obsolete before we can stop making 'em.

"Take engines. You know that engines are operated only for a certain number of hours. The maintenance geniuses figure out how many. Then the engines go back to the depots for overhaul.

"That means pipeline time. For instance, if an engine will fly three months between overhauls and it takes three months to send it to the depot, get it overhauled and sent back, that means you have to have two engines at $50,000 apiece to keep that plane in the air—one in the pipeline and one in the plane. More spare problems.

"So far, it's simple mathematics. But take two F-101s. One is ticketed for Korea, the other for a base in Africa. They're the same plane but they have slightly different missions —so some of the parts will be different. More problems.

"And so you know what'll happen, don't you? One plane will probably fly in Alaska and the other in Australia. And a guy like you will be raising hell about no spare parts.

"Or the world situation changes. Who knew in January 1950 that you'd soon be in Korea, fighting real tough war? Or tell me what the Air Force—and you—will be doing in 1956 or 1957. Korea's over. Will it be Indo-China? Or Europe? Or no place?

"Sure, I know the spare parts experts have intelligence reports and all kinds of experts to draw on. But who'd have the guts to say right now that we will or won't be fighting in any particular spot and on how large or small a scale in 1957? Yet you have to think about it when you order spare parts, just like you do when you order airplanes. You have to be ready to scrap all your plans at a minute's notice and start all over again.

"But assume that all these problems are licked. Next comes timing—and the big answer to your gripes. The requirements boys must figure how long it takes to produce each part. A nut or bolt might take a few days, a flight instrument a few months, an engine longer.

"If they were all ordered at the same time, Uncle Sam would have to have acres of warehouse space just to store the stuff. Even if it didn't get obsolete, it might kick around so long it would rust away.

"So you get into timing, or lead time. You order every part far enough ahead of time so that you have it when we need it—when the plane goes into service. If any parts are delayed, some or all of the planes may be grounded.

"When that happens to your car, you're sore. If it happens to the Air Force, we could be up a stump.

"What I'm saying is that the auto manufacturer has plenty to lose if he can't supply spare parts, but his competition is nothing compared to the Air Force's. The manufacturer can go bankrupt. The Air Force can't lose a war.

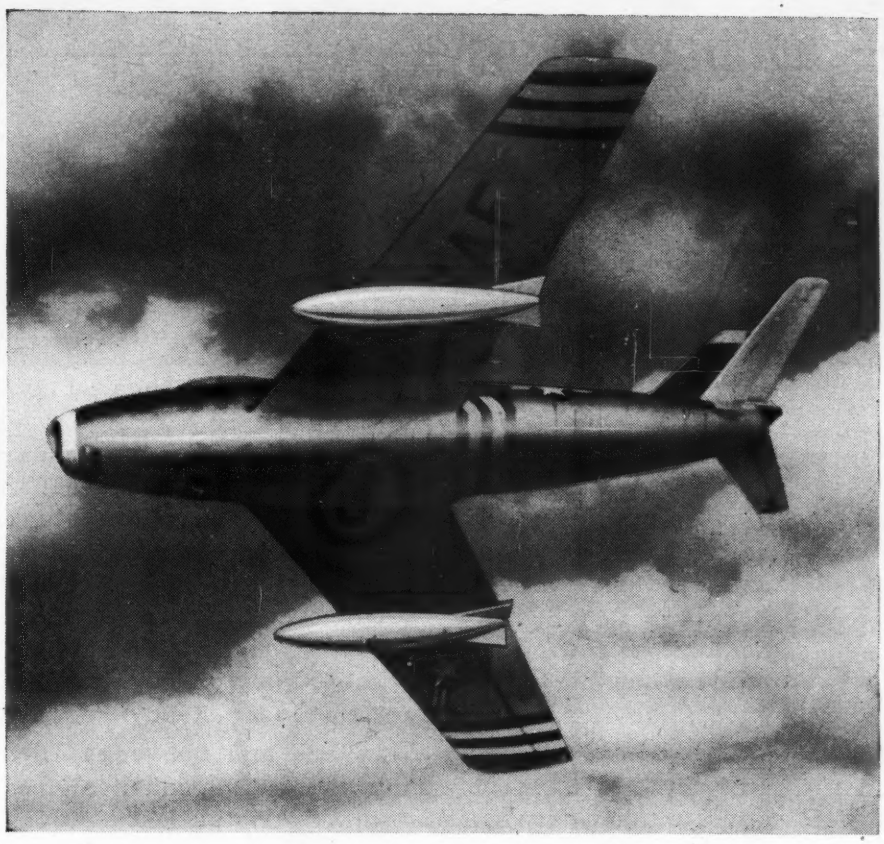
"But there is still another obstacle —money. Congress controls the purse strings. One year you get more money, the next you get less. So you have to refigure, down or up as the money flows.

"So, now what were you saying, Sarge?"

The crew chief opened one eye. "When do I get my spare parts?"

"Nuts," said the Prof. "Here's the trailer now. Take your pick, Sarge."

—END



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MOBILIZATION NEWS — BY JAKE CULPEPPER

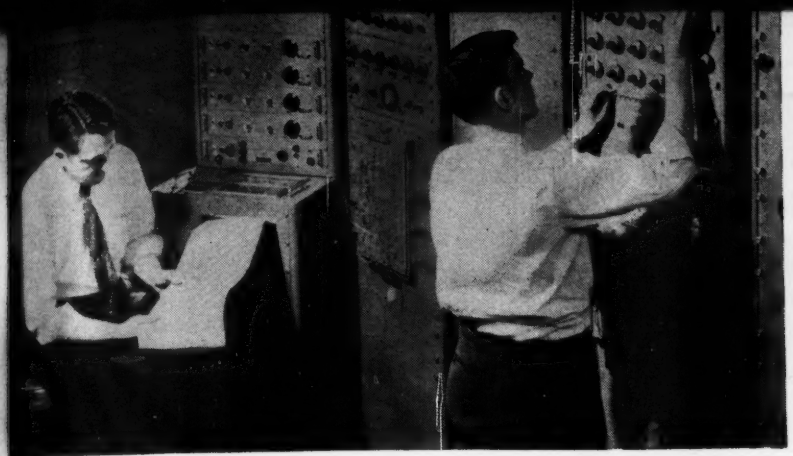
PAY — With pay offers to thousands who hold Standby Reserve assignments, AF expects to triple the number of paid Reservists by July 1, 1954. Last June 30, Reservists on pay status totaled 14,520. Under new setup, those mobilization assignments needed under limited (Korea) conditions, as determined by the commands, will come under the Ready Reserve. All other assignments under this program may be held by Standby or Ready Reservists. Both will now receive pay; formerly only Ready Reservists were eligible for pay. Only the 375th, 435th, 442d, 512th and 514th Troop Carrier Wings will continue as units of Ready Reserve (subject to recall in emergency declared by the President or Congress). The three remaining troop carrier wings and all other combat, combat support, and flying training wings and units are now in the Standby category (subject to recall only in emergency or war declared by Congress) and will be staffed by both Ready and Standby Reservists, all of whom are eligible for pay. Reservists eligible for Standby status but stuck with the two-to-five year Ready Reserve agreements may request that their contracts be scrapped. New policy has no effect on mobilization designations and other unpaid jobs, whether filled by Standby or Ready Reservists.

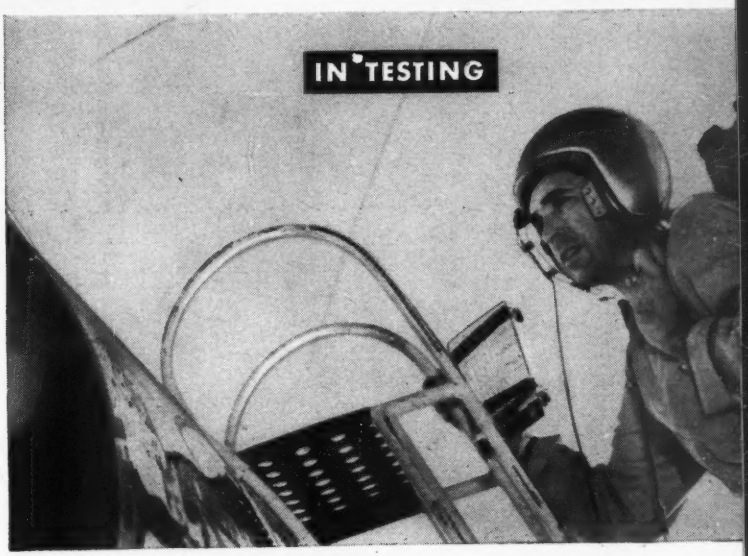
DEPENDENTS — Ready Reserve officers and non-coms in an inactive duty training pay status with four or more dependents are presently subject to involuntary recall. Airmen in grades E-1, 2, 3, and 4 with four or more dependents may not be assigned to paid Ready Reserve positions; with the exception of E-4 grade airmen having seven or more years service for pay purposes.

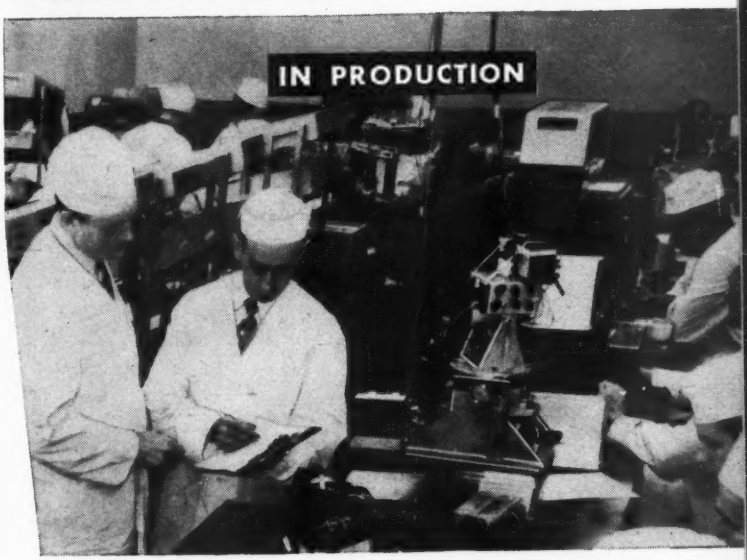
CUTBACKS — Maximum annual inactive duty pay training periods for mobilization assignees have dropped from twenty-four to twelve. Minimum requisite to continue in program has been reduced from twenty-four to twenty active duty training periods annually. But fifteen-day active duty tours are a must for assignees. . . . Mobilization assignees and members of the Non-affiliated Reserve Section may request waiver of required training time if AF thinks their civilian jobs are closely enough allied to primary AF specialty. No points for retirement will be given during waiver except the fifteen handed out for staying in the Reserve.

POLICY — Rated Reserve officers who have M-Day assignments with AF Judge Advocate must voluntarily request release from flying status or lose JAG assignment. . . . Reserve airmen ordered to active duty since January 1, 1952, under AF Reg. 39-48 (voluntary entry of enlisted Reservists on active duty) must serve at least twenty-four months. . . . Mobilization training designations with major air commands are now available to members of VARTU in separate program from the mobilization-designation setup.

BRIEFS — Late figures show AF civilian employees total 301,000. . . . GAO has ruled that a Reserve officer injured while traveling to or from inactive duty training is not entitled to active duty pay during time he's disabled. . . . Beginning August 25, draft registrants not already deferred as fathers cannot use fatherhood as a basis for future deferment, according to Selective Service officials. . . . Black jump boots are in store for Reserve air police in near future. . . . Official CAP and AF dress are now identical, except for insignia. Standard WAF uniforms have been authorized for senior CAP women. . . . AF officers mess charge for eating has been raised from $1.45 to $2.25 a day.







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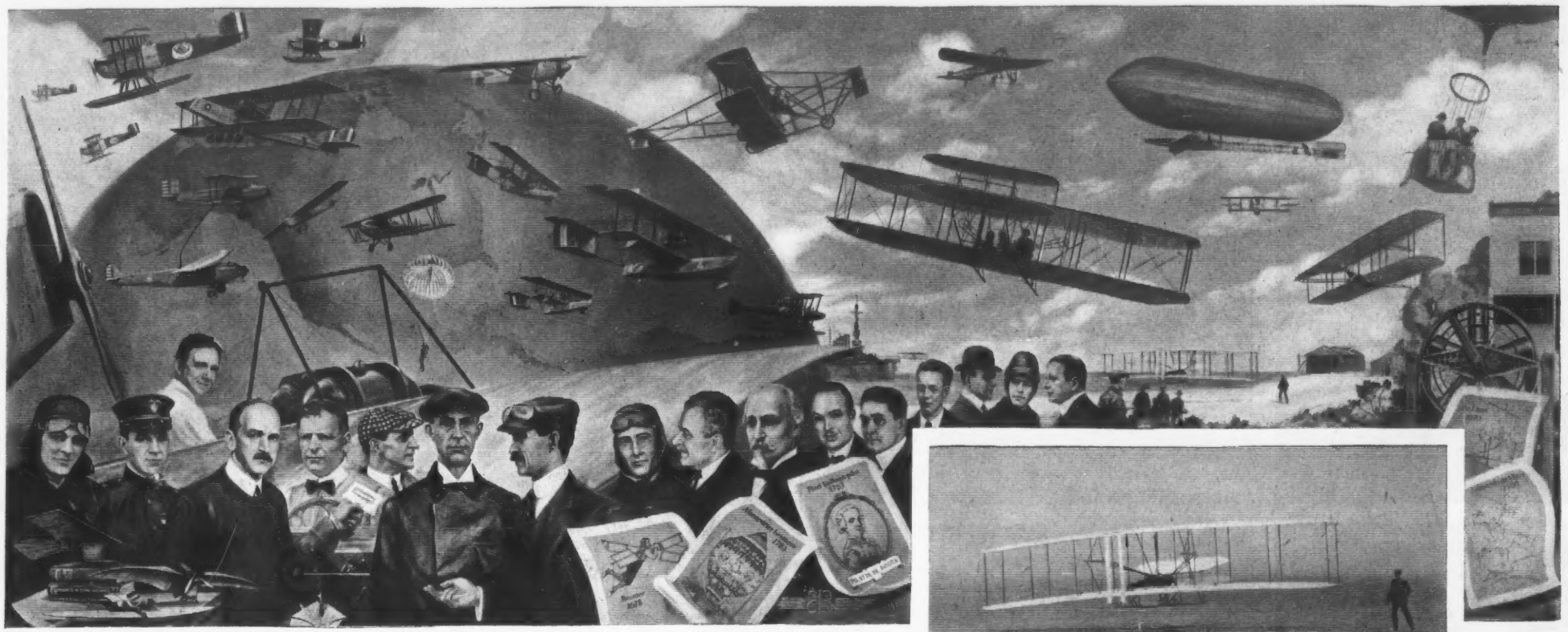

Section of Early Bird mural located in the Administration Building of The Liquidometer Corporation depicting some of the pioneers and craft that played an important part in the advancement of aviation.

• *(Color reproduction and descriptive key sent on request)*

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AF SPEEDSTERS AT IT ONCE MORE

Air Force pilots began cracking records back in 1922 when Billy Mitchell did it

Lt. Col. William F. Barns and his record-breaking F-86D.

FLASHING speed coupled with an eerie roaring sound marked another chapter in world air speed records July 16 when Lt. Col. William F. Barns of the US Air Force flew 715.697 mph in a North American F-86D Sabrejet over the Salton Sea, Calif., course.

Colonel Barns sped past the small group of observers quicker than any of them could say "airpower," and the previous record of 698.505 mph, set by Capt. J. Slade Nash on November 19, 1952, over the same course, was exceeded by better than seventeen mph, a whopping figure once speeds climb into the 700-mph bracket.

Colonel Barns, 32 and assigned to AMC, flew a conventional F-86 equipped for operational duty, with a simulated ammunition load aboard. His flight was made under the usual rules stipulated and supervised by the National Aeronautic Association. Charles Logsden, official timer, certified the record run made over the three-kilometer (slightly less than two miles) course.

Barns flew the course twice, once in each direction to offset any wind disparity. The two runs were averaged, using automatic electric timers, and cameras were employed electrically. Colonel Barns stayed well under the maximum altitude of 1,640 feet permitted at any time after take-off, in fact actually flew at an altitude of about 100 feet. He dove at the start of the run to get maximum speed for the test.

Barns's Sabrejet was powered by a General Electric J-47-17 turbojet engine with afterburner. Captain Nash flew the same model F-86, also equipped with afterburner, for his record last November.

The records by Barns and Nash are the latest in a series set by US Air Force personnel over the years, starting back in 1922 when military fliers generally took world air speed records out of the hands of civilians, who had dominated the field prior to that time.

Billy Mitchell, prophet of today's airpower and a brigadier general at the time, set the first of the unqualified speed records recognized by the NAA on October 18, 1922, at Detroit, Mich., with a speed of 222.97 mph. He flew a Curtiss R-6 Army racer, a biplane powered with the Curtiss 375-hp engine. In line with rules which exist today, the NAA supervised and certified this record flight and subsequently presented the facts to the Federation Aeronautique Internationale, Paris, France, for world recognition.

Less than a year later, on March 29, 1923, this record was exceeded by Lt. Russell L. Maughan at Dayton, Ohio, with a speed of 236.59 mph. Maughan also flew a Curtiss R-6 racer, but with a Curtiss 465-hp. engine.

The mark by Lieutenant Maughan stood for almost ten years, until September 5, 1932, when Maj. Jimmy Doolittle ran the record up to 294.38 mph at Cleveland in a Granville Gee-Bee racer, powered with a Wasp engine.

From then until 1947, when Col. Albert Boyd flew an unbelievable 623.738 mph, there were few attacks on air speeds by the Air Force, which had to fight to get appropriations to stay in business. World War II, with emphasis on airpower and speed, changed all that. Colonel Boyd made his record on June 19 at Muroc, Calif., in a Lockheed F-80R, a low-wing single-seat monoplane with a General Electric J-33 jet engine.

Boyd's record was broken by Maj. Richard L. Johnson on September 15, 1948. Flying also at Muroc, Major Johnson sped 670.981 mph in a North American F-86A, the first of three consecutive speed records for this plane, including those set by Captain Nash and Colonel Barns. The F-86 flown by Major Johnson did not have the benefit of an afterburner, as the A model was equipped with the normal J-47 GE-17 jet engine.

All of these flights by Air Force men were made in land planes. Doolittle also set a record for seaplanes with a speed of 245.718 mph on October 27, 1925, at Baltimore, Md., in a Curtiss R3C2 racer that was powered with a V1400 Curtiss 619 engine.

Miss Jacqueline Cochran, World War II head of the WASP, set a series of records for women in North American F-51s and F-86s, starting in 1948 and culminating in the figure of 652.552 mph May 18, 1953, at Edwards, Calif. She flew a Canadian-built F-86 that was equipped with an Orenda engine. The Sabre did not have radar equipment in its nose, nor did it have benefit of the afterburner.

The Cochran record was set over a closed course, as was a speed mark of 635.686 mph made under the same conditions by Air Force Col. Fred J. Ascani on August 17, 1951, at Detroit in an F-86 Sabrejet.

The first speed record, naturally, was the first power-driven man-carrying airplane flight which was made by Orville Wright December 17, 1903, at Kill Devil Hill, Kitty Hawk, N. C. His speed was estimated at thirty-one mph in a twelve-second flight over a 120-foot course.

The first maximum speed record properly supervised and certified was made by Alberto Santos-Dumont, a Brazilian who lived in Berlin, on November 12, 1906, with a mark of 25.6 mph at Bagatelle Flying Field, Paris, France.

From then until 1922 France held most of the speed records until Army Air Service pilots, under the US Army Signal Corps, began to set records—with Colonel Barns's dazzling 715.697 mph the latest result.—END

TECH TALK

By Everett E. Dodd

A new stablemate of North American's vaunted F-86 Sabrejet recently had a workout at Edwards AFB, Calif. It was the FY-100, prototype of the AF's so-called Sabre 45, now in production. Its performance characteristics are restricted, but this much is known—it is powered by Pratt & Whitney's J-57 engine (approximately 10,000-lb. thrust), and will fly faster than sound. North American test pilot George Welch, who flew the first F-86 in 1947, gave the FY-100 a real "wringing out," and said it did "everything we hoped."

Performing a physical examination on pilots while they are flying their aircraft at five or six thousand feet seems a remote possibility. But a Navy doctor recently proved its feasibility. By attaching silver electrodes to various parts of the bodies of two Navy flyers, 6,000 feet over Los Angeles, he electronically recorded their flight reactions, which were transmitted to instruments on the ground. The remote-control physical, conducted by the doctor while sitting in a hotel room, is the result of research by the Naval Research Institute, Bethesda, Md. With this telemetering system, which uses amplifiers and ultra-high frequency radio, doctors can determine a pilot's heart performance, respiration, skin and body temperature, pulse rate, and brain wave activity.

Simulating bailouts from high-speed jet aircraft is the job of Chance Vought's "test pilot" Crump. Every day at the company's test laboratory at Dallas, Tex., technicians strap him into a F7U-3's cockpit. To simulate an emergency exit from the Cutlass, they set off the explosive charge that tosses Crump more than sixty feet into the air. Landing in a water-filled pool cushions the landing shock for Crump. Refreshingly, Crump never refers to it as "all being in a day's work" or "you have to have nerves of steel." For he doesn't. He's a wooden dummy.

Invidious foe of airmen and aircraft alike on the AF's island bases—such as Okinawa and the Philippines—is corrosion. Heretofore it was an all-day job for six- or eight-man teams using elbow grease and wielding scrub brushes to wash down a C-47. But recently a master sergeant and an AF civilian employee with the Philippines Air Logistic Force devised a portable washing tank for doing the same job. Jetting a stream of powerful cleaning solution under high pressure onto a plane's surfaces, the portable washer makes it possible for three men to wash down a C-47 in 2½ hours, a saving of nearly $1,000 in man-saved hours a month.

O'Neill, Neb., a small town of little more than 3,000 which is 170 miles northwest of Omaha, is currently playing a big role in an Air Research and Development study into atmospheric turbulence and its effect on Air Force operations. The study, begun four years ago by ARDC's Cambridge Research Center, Mass., will be concluded when more than 100 scientists descend on O'Neill in a two-month field study investigating the diffusive processes in the lower atmospheric levels. Information obtained will better enable scientists to cope with the problems of smog and air pollution.

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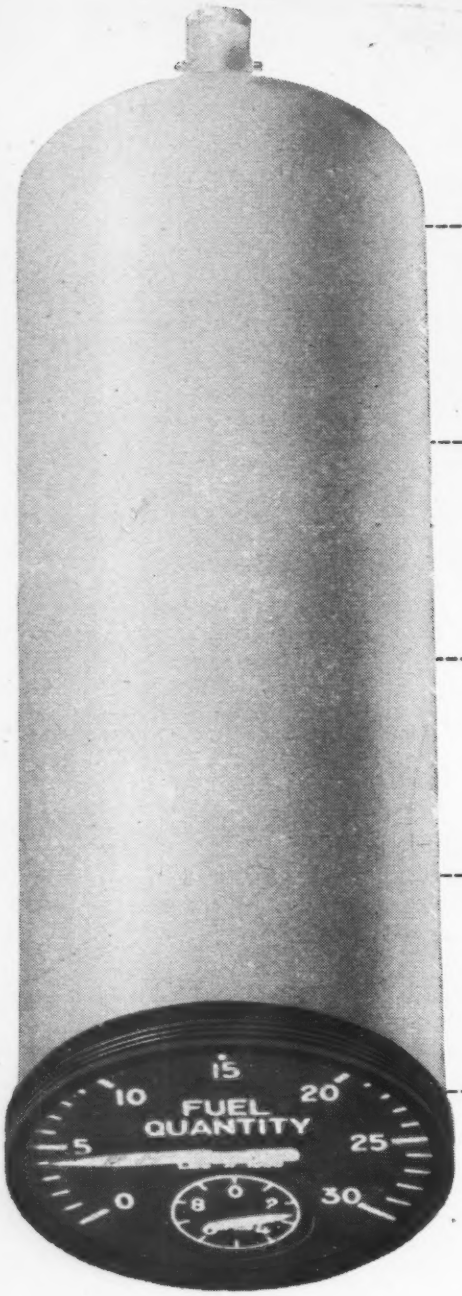

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AVIEN - KNICKERBOCKER, INC.

58-15 NORTHERN BOULEVARD, WOODSIDE, L. I., N. Y.

New Plastic Wing Tips

Plastic wing tips are being used on Republic Aviation's Thunderstreaks—600-mph-plus fighter-bombers. Lighter than aluminum ones, they save six pounds per plane. Instead of being laboriously assembled from several pieces like the old metal ones (see cut), the plastic tips are molded in one piece from plastic resins that are poured over six layers of glass cloth.

Refueling Tanks Relocated on New KC-97G

Shown just taking off is the AF's new KC-97G, 11th and latest in Boeing's Stratofreighter series. A 350-mph tanker, the G can serve as a personnel and hospital air evac transport as well as a multi-purpose cargo aircraft. Its refueling tanks have been relocated, which allows it to become a cargo carrier without having its refueling equipment removed. With earlier models it took about six hours to convert from tanker to transport. Equipped with a telescoping, rapid-flow, fuel transfer boom, KC-97s are being assigned to SAC tanker squadrons for use as aerial gas stations in B-47 wings. The Boeing planes are powered by P&W R-4360-59 engines and have streamlined wing tanks.

B-47's Versatility

Men of the 306th Bomb Wing, now in England, have found that the world's fastest known bomber—the B-47—can be quickly modified into the world's fastest cargo aircraft. External wing tanks, they've discovered, can be altered into cargo compartments by cutting access doors in the sides, laying plywood flooring, and installing tie-down bolts. If ATO (assisted take-off) rockets are not used, their compartments can be used to carry spare nose cones, tail pipes, and personal luggage (see right). And in flight, with outside temperatures as low as 45 degrees below zero, the ATO compartments make a fine refrigerator, or deep freeze at 20,000 feet.

Safety Course Spins Students

[w]ed around at the end of a 23-foot boom, the student officer below s taking a centrifuge exam to test his tolerance to G forces. It's all art of the curriculum of a unique six-week course being conducted t the University of Southern California for AF Flying Safety officers.

XF-88 Feathered-Engine Take-Off

Two Westinghouse J-34s are used to power the McDonnell XF-88B on take-off. At 20,000 feet an Allison XT-38 turboprop engine (shown feathered) is cut in. Then, driven by three gear boxes of different speeds, the prop is tested to provide data on supersonic-type propeller operation.

By T/Sgt. William Wallrich

BEDCHECK CHARLIE FLIES AGAIN

Korea and World War II had their parallels. One was the enemy's nuisance raids

A TWENTY-six-year old, wood and fabric Communist biplane had the jet-propelled US Air Force in Korea up the well-known stump for a while this summer.

Yep, you veterans of World War II have guessed it—"Bedcheck Charlie" was back for a repeat performance.

Slow, low flying, prop-driven museum pieces pulled out of mothballs by the Reds, came chugging down the peninsula of Korea on night nuisance missions that had the jet jockeys muttering in their beards. The war had suddenly grown entirely too old-fashioned.

The F-94 pilots were not the only ones having a hard time. The radar people had their work cut out for them as well. Radar was proving just as ineffective as the jet fighters against the Communist antiques. Aged and decrepit as the latter were, they were still managing to bumble down and take small swats at Seoul, Inchon, and other key allied air bases and installations.

During June and July, Communist Charlies almost nightly started air raid alert sirens screaming here and there across UN Korea. The biggest damage was at Inchon on the night of June 16 when bombs "kicked out" of a small sworm of Charlie aircraft set a fuel dump ablaze and destroyed a million gallons of fuel. Sixteen Americans were injured and four Koreans were killed in this raid.

A few days after the Inchon "million-gallon" fire, the Air Force admitted that "it is at present impossible" to prevent the light trainer aircraft from continuing such nuisance raids.

At that time, an Air Force spokesman gave the following reasons for this successful defiance by obsolete planes of the UN's latest developments in military technology:

- The Red aircraft flew at treetop level down narrow valleys, to come in under allied radar.

(Continued on page 110)

Present And Accounted For...

IN THE SKIES over our own land, and in the skies over troubled lands throughout the world, Cities Service Aviation Gasolene is present and accounted for... playing its important role in the global struggle for freedom and peace.

Production is surpassing previous highs, but every gallon of aviation gasolene produced at the great Cities Service Refineries is committed to meet the needs of our Air Force, and existing contracts with commercial operators.

Cities Service is proud to lend its support to the world's greatest team of fighting men, to America's first line of defense, to our United States Air Force.

CITIES SERVICE

AVIATION PRODUCTS

New York • Chicago • In the South: Arkansas Fuel Co., Inc.

• Searchlights and anti-aircraft defenses were manually or mechanically controlled. There were little or no radar-controlled anti-aircraft guns so vitally necessary for night aerial defense.

• Our all-weather jet night fighters were virtually helpless against these ninety-six mph Charlies because of the former's tremendous speed and great range of turn.

• American trainer-type light planes, which could have successfully maneuvered against the Red nuisance "bombers," were not equipped to find and track the Communist aircraft down in the dark.

The basic aircraft employed by the Communists for these Charlie raids was the PO-2, a Russian-made aircraft that first saw production in 1927. Originally the U-2 (until 1944) and designed as a two-place trainer, the PO-2 has seen service as an observation plane, a reconnaissance bomber, as well as an ambulance, freighter, crop duster, and glider tug.

Still in production as late as 1944, its wooden spar and rib structure, along with a fabric covering, made it an exceedingly difficult target for radar impulses. Radar sends out an impulse that reflects against an object, preferably metallic, and then bounces back to be picked up by the radar receiver. The character of the returned signal, along with the time required for it to return, provides the data for estimating the direction of the "bogey" as well as its distance and speed.

The very antiquity of the PO-2 made it an excellent aircraft for Charlie missions. With a maximum speed of ninety-six mph and a cruising speed of seventy-five mph, the PO-2, instead of outflying the jets which were at first sent up against them, simply underflew them.

North Korea didn't have much to offer in the way of operational airfields. But the PO-2 lands at thirty-five mph and can operate off any "wide place in the road."

Charlie's armament added insult to embarrassment. His "bomb load" was usually ordinary hand grenades or worked-over artillery and mortar shells.

Little could be done at first except tighten up ground warning systems and blackout procedures. Everyone began dreaming up ways to get at Charlie. And, get at him they did.

During the height of the "Charlie push," Navy Lt. Guy Bordelon shot down five Charlies while flying a prop-driven, shorebased Corsair to become the first Bedcheck Charlie ace as well as the first Navy ace of the Korean war. Bordelon, whose unit was attached to the Fifth Air Force, brought down his fifth Charlie over the Han River estuary July 17.

Late in July the Air Force came up with still another answer to Charlie. They started doing a little bedchecking of their own—in daylight. On July 16, Sabrejets of the Eighth Fighter-Bomber Wing permanently bedded down two potential Charlies, believed to be either YAK-18s or PO-2s. They were destroyed in camouflaged revetments on a Red airfield near Pyongyang. One other Charlie was damaged on the raid.

It all reminded me of my own first contact with a Charlie-type raid. During World War II I went overseas with a B-17 bomb group which landed in Scotland in March 1943, destined for England.

(Continued on page 113)

MISSILE CONTROL BY SUMMERS

DOWN GOES PRICE... YET QUALITY REMAINS!

Volume production now overcomes Cost and Delivery barriers on high performance Gyroverticals

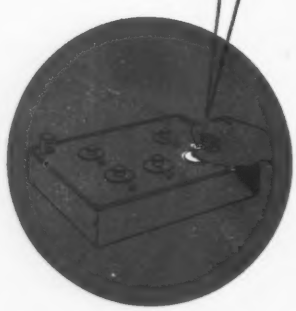
With Model 69, Summers now offers an accurate, responsive, lightweight, rugged gyrovertical—at a price heretofore unheard of. Model 69 is used to establish the basic reference element for aircraft and missile automatic control systems. It incorporates revolutionary Summers principles that are government proved and accepted.

Model 69 is now in volume production in the Summers plants. Quantities of 200 or more shipped within 10 days; smaller quantities immediately. Write today to Department A-2.

price $580* fob Factory

*in lots of 200. Slightly higher in smaller quantities. Prices firm to January, 1954.

Model 69 GYROVERTICAL

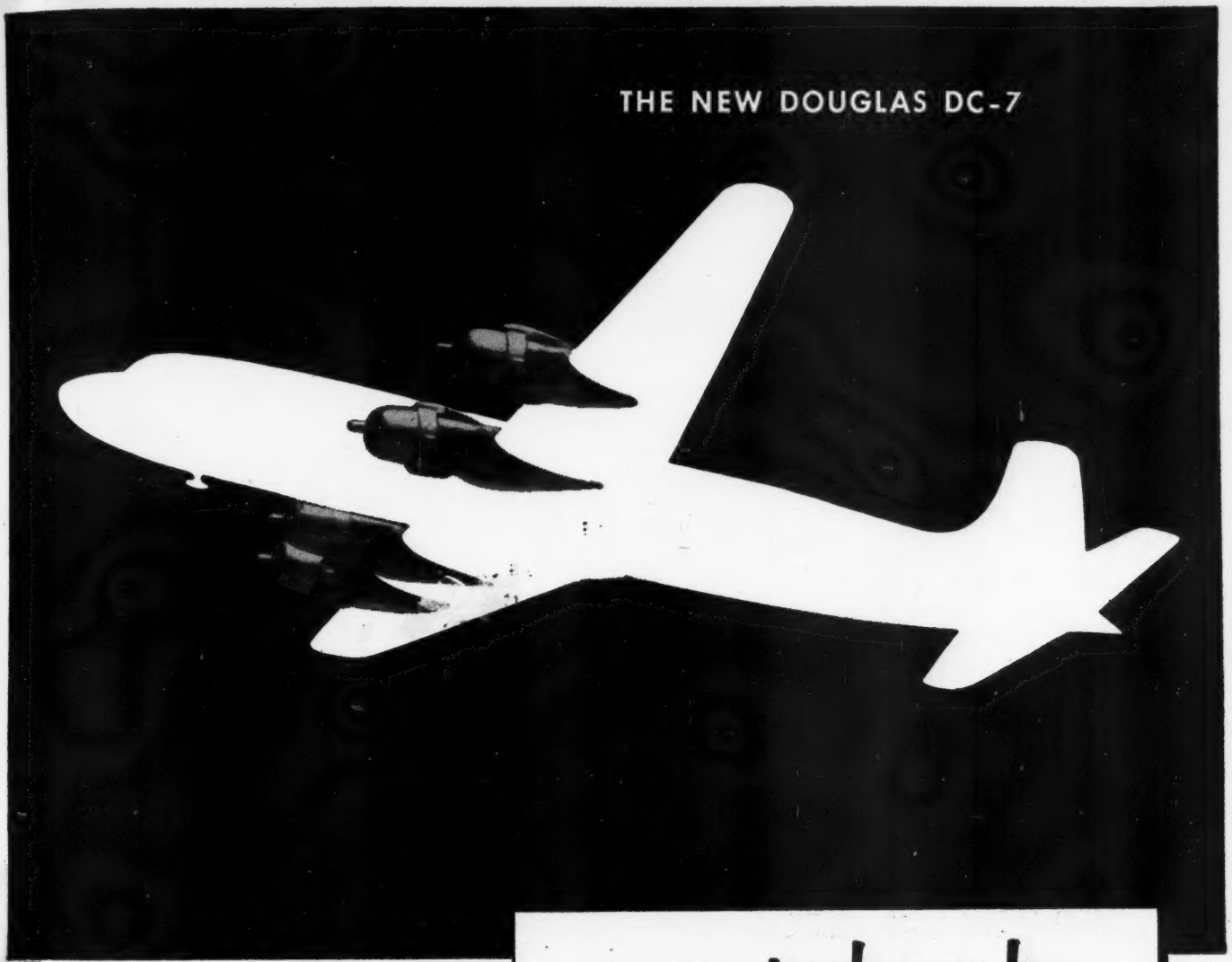


Meets MIL Spec E-5272
Power: 28 V DC
Two 2000 ohm Potentiometer Pickoffs
Avg. Running Current: 375 mils
Resolution: .12%
Gravity Erection: 1° of Vertical
Weight: 3¼ lbs.
Size: 5 13/32" long x 4½" dia.
Shock Resistance: 30 G's
Roll Axis Freedom: ± 80°
Pitch Axis Freedom: ± 60°
Erection Cutout: Optional

SUMMERS GYROSCOPE COMPANY

2328 BROADWAY, SANTA MONICA, CALIF.

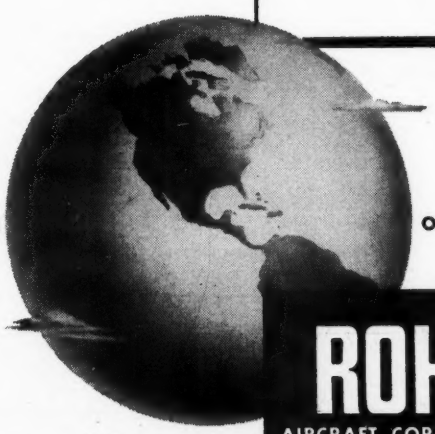
THE NEW DOUGLAS DC-7



Here's the big, handsome, DC-7 — Douglas' latest commercial airplane. This picture shows off the power packages built for the DC-7 by Rohr . . . world's largest producer of ready-to-install power packages for both commercial and military planes. In addition, Rohr Aircraftsmen currently are producing more than 25,000 different parts for all types of airplanes.

power packages by

ROHR



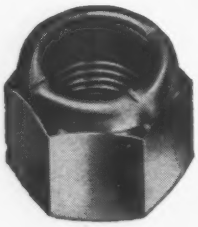
WORLD'S LARGEST PRODUCER OF READY-TO-INSTALL POWER PACKAGES FOR AIRPLANES

ROHR
AIRCRAFT CORPORATION

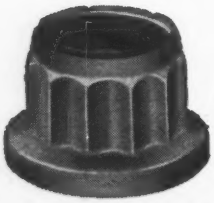
CHULA VISTA AND RIVERSIDE CALIFORNIA

self-locking fasteners

Elastic Stop nuts

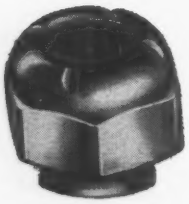


HEX NUT

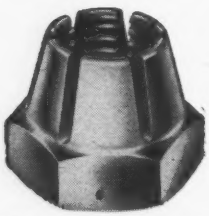


HIGH TENSILE NUT

SPLINE NUT

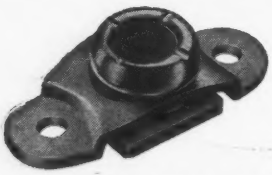


CLINCH NUT



1200° F. HIGH-TEMP. NUT

GANG CHANNEL NUTS



FLOATING ANCHOR NUT

Every major aircraft now being assembled relies on the vibration-proof holding power of ELASTIC STOP nuts. Only ESNA manufactures a complete line of all types and sizes of self-locking nuts.

Rollpins

dia. from 1/16" to 1/2"

Rollpins are slotted, tubular steel, pressed-fit pins with chamfered ends. They drive easily into holes drilled to normal tolerances, compressing as driven. Extra assembly steps like hole reaming or peening are eliminated. Rollpins *lock* in place, yet are readily removed with a punch and may be reused.

Cut assembly costs by using Rollpins as set screws, positioning dowels, clevis or hinge pins. Specify them in place of straight, serrated, tapered or cotter type pins.

ESNA® TRADE MARK

ELASTIC STOP NUT CORPORATION OF AMERICA

ROLLPIN TRADEMARK

Mail Coupon for Design information

Elastic Stop Nut Corporation of America
Dept. N-34-939 Vauxhall Road, Union, N. J.

Please send me the following free fastening information:

- ☐ Elastic Stop Nut Bulletin
- ☐ Rollpin Bulletin
- ☐ AN-ESNA Conversion Chart
- ☐ Here is a drawing of our product. What fastener would you suggest?

Name_____ Title_____

Firm_____

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City_____ Zone____ State_____

CHARLIE——CONTINUED

Within a few days, while we were still getting settled at a former RAF base near Framlingham in the Midlands, a German Bedcheck Charlie swept in one night and paid our fledging group a visit.

Shortly before midnight, air raid sirens began to moan their warning. We grabbed up a weird assortment of helmets, canteens, and carbines and dashed out into the darkness.

To the north and south the spears of the searchlights protecting Norwich and Ipswich darted frantically about. Above us, directly above so it seemed, we could hear the aircraft's engine. By this time the entire base was running erratically about.

Several RAF night fighters arrived on the scene and we could clearly hear the ghostly unseen battle taking place above us.

These were the first shots most of us had ever heard fired in seriousness. The stick of German bombs that followed were our first real taste of the potentiality of death.

Then, as suddenly as it had started, it was all over. The night was once more silent, save for the gabble of men huddled about cold stoves in Nissen huts talking over their recent experiences.

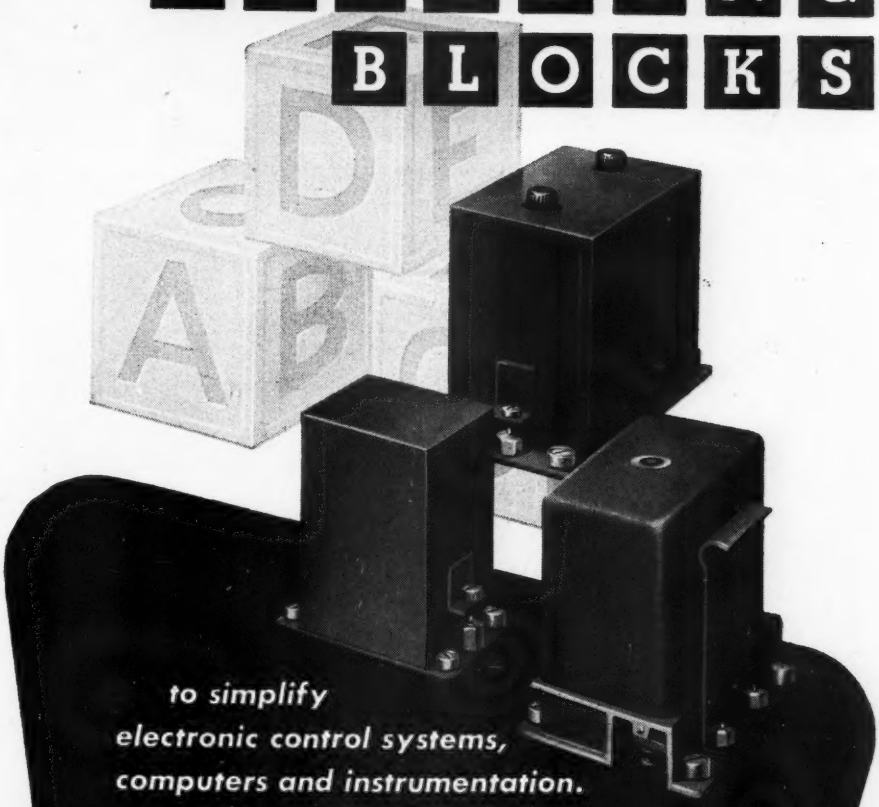
That raid proved to be a cold mental douche in many ways. Despite the fact that the German bombs had only killed two cows, the group became most aware of the fact that not only was there a war going on, but that they were an integral part of it.

For the most part, the cooks and bakers, mechanics and orderly room pencil pushers participate in the aerial war only vicariously through combat crew post-mission chatter, the sight of battle-damaged aircraft, the empty chairs and bunks of the crews that "didn't make it back."

It has been the Bedcheck Charlies of the last war, and of Korea, who have done the most to change this situation. And, to an unusual degree, they have accomplished their unbriefed mission. Unknown thousands of Air Force personnel as well as even larger numbers of personnel of other branches of the service have had their only actual contact with the enemy through the activities of the night nuisance raiders—the Bedcheck Charlies.

If nothing else, Charlie did provide an interlude in Korea—a strange interlude in which the world's most technically advanced air force for a moment came face to face with its almost forgotten youth.—END

Electronic BUILDING BLOCKS



to simplify electronic control systems, computers and instrumentation.

Servomechanisms, Inc. "building block" or packaged function technique reduces intricate "all in one" systems into simple, standard electronic components which plug into pre-wired chassis. This advanced design philosophy provides ***reliability, interchangeability, and ease of maintenance.***

The same concept has been applied to Servomechanisms, Inc. expanding line of transducers.

Universally accepted and proven in combat these "building blocks" are available for 60 and 400 cycle applications. Write to Dept. CLO 4 for complete information.

A typical Servomechanisms, Inc. analog computer and transducer for aircraft instrumentation.

SERVOMECHANISMS INC.

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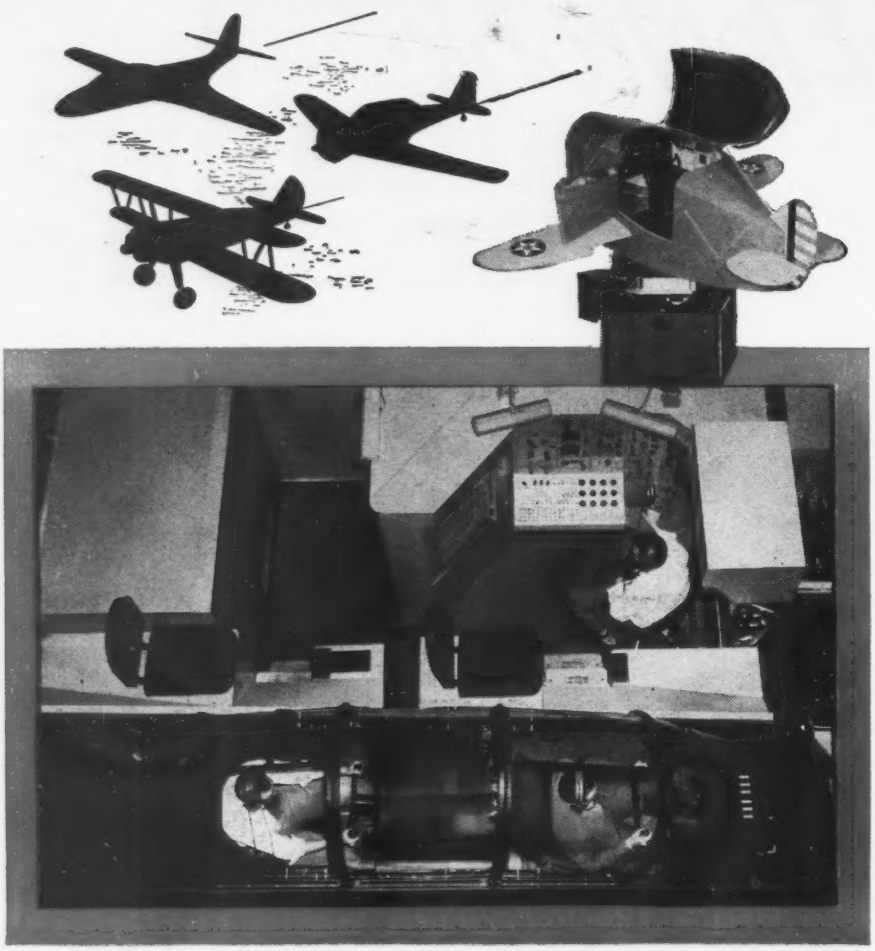
POSITIONING MECHANISMS • SERVO AMPLIFIERS • MODULATORS • POWER SUPPLIES
SERVO MOTORS • ADAPTERS • TRANSDUCERS • MECHANICAL DEVELOPMENT APPARATUS



SCHOOLROOMS OF THE SKY
...DOWN-TO-EARTH!

The world-famous "Link Trainer" of years ago simulated the very simple flight conditions of early aircraft. Yet it established the essential principle of a down-to-earth schoolroom where actual flight conditions are *exactly* duplicated . . . a principle that slashed the cost of training, in time and money.

Today's Link Electronic Equipment improves upon the early Link Trainers in this principle . . . much as a postgraduate lecture room has advanced from the Little Red Schoolhouse. This complex equipment simulates the infinitely complex conditions of near-sonic and supersonic jet aircraft . . . *all* conditions and *all* factors influencing them, from take-off to flight to refueling, navigation and landing, and it does all this electronically.

All Electronic Trainers of today utilize Link basic patents on flight simulators. These complex "schoolrooms" enable the pilot to solve on the ground the innumerable problems he will later face in the sky.

the connecting link between ground and sky

LINK AVIATION, INC.
BINGHAMTON, N. Y.

LINK invites employment applications from engineers and draftsmen.

JET BLASTS

WHY SECURITY MEN GET GRAY

It's the 'bits and pieces' that add up to intelligence

Many people think of "intelligence" as a cloak-and-dagger business with agents of a foreign power slinking around waterfronts and defense plants.

More often, however, intelligence is nothing more than putting two and two together to make four. It is the scientific collection and evaluation of bits and pieces of information that most people regard as unimportant. When assembled, these bits and pieces can reveal astonishing facts about an organization's plans and potential strength.

There are hundreds of excellent examples of how intelligence is used in everyday business, and to prove it, a common-type item such as soap may be used as an illustration.

Let's suppose that you are a soap manufacturer. It is known that you have been doing an increasing amount of business with the textile industry, and rumors among the trade say that you are looking for a new site in the South.

Here is where the intelligence boys of a rival soap manufacturer go into action. It won't be long before your rival seeks and gets some information. From friendly firms and salesmen with whom he does business, he may learn that you are beginning to gather information about sulfonated oils. This is a synthetic type of oil used to build or make soap detergents.

"The guy is definitely up to something," the competitor will reason, "and if it is not the manufacture of a new detergent then I'm blowin' bubbles."

Another report may unearth the fact that you have been in St. Louis because some friends made a few wisecracks about a party you gave at a big hotel. Also, you were seen using a book of matches which publicized a restaurant located near a large St. Louis chemical firm that makes sulfonated oils.

Now the competition takes another look and gives attention to the reasons you are contemplating a plant in the South. He knows that a large segment of the textile business is moving to that area, and since synthetic detergents are used in dyeing processes, he has a sure-

(Continued on page 116)

LET'S HAVE YOUR JET BLAST

In "Jet Blasts" you can sound off on any subject you want. Each month we'll pick the letter or letters we feel will interest our readers most and pay $10 for each one printed. Please keep letters under 500 words.—The Editors.

We've wired the Little Red Schoolhouse for SOUND

The American schoolhouse isn't little any more. And its need for fast intercommunication has grown as rapidly as its rooms and its enrollment.

Yesterday's "communication" was pretty much limited to teachers sending pupils scurrying on errands. Today, anyone in the school, from class president to principal, can man the mike—supervise high fidelity record-playing—*use the network of intercom telephones*—or send and direct programs and announcements to any or all of 60 stations!

School assemblies no longer mean a mad rush to the auditorium; instead, a thousand children sit in their rooms and listen. High fidelity radio programs and recorded music, announcements, and television educational features can be received in every room or in any selected few. And the advantages of such a service in fire drills or in Civil Defense practice is both obvious and imperative.

We make these Systems. We have them in service from coast to coast. Their engineering may seem complex to the layman. It's just second nature to this pioneering company which has been in the forefront of communications since the days of McGuffey's Reader!

There is nothing finer than a

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STROMBERG-CARLSON ALSO LEADS IN:

Telephone Instruments and Central Office XY Dial Equipment

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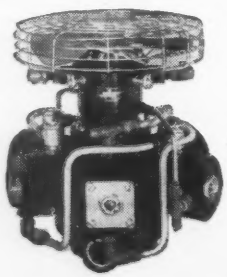
REPUBLIC AVIATION JOINS Cornelius FAMILY

CORNELIUS COMPRESSOR STANDARD EQUIPMENT ON F-84F THUNDERSTREAK

Republic's F-84F THUNDERSTREAK is the latest and fastest flying member of a rugged family which has long served the U.S. Air Forces' needs in the fighter and fighter-bomber field.

● In equipping the F-84F THUNDERSTREAK with the CORNELIUS AIR COMPRESSOR Republic Aviation joins the CORNELIUS family of famous names in aviation ... Boeing, Canadair, Chance Vought, Douglas, Lockheed, Martin, McDonnell, North American, Northrop.

CORNELIUS is proud of this recognition ... developed from long experience building dependable pneumatic equipment for the Air Force, Navy and leading aircraft manufacturers. Profit from our experience ... write to us about your pneumatic equipment requirements.



CORNELIUS COMPRESSOR
4CFM ... 3000 PSI
Powered by integral hydraulic motor. Other models available with various pumping capacities. All compressors can be furnished with either hydraulic motors, DC electric motors or AC 400 cycle motors.

THE Cornelius COMPANY
MINNEAPOLIS 21, MINNESOTA

Pioneers in the Development of
AIRCRAFT PNEUMATIC SYSTEMS

JET BLASTS——CONTINUED

fire lead on why you are interested in adding to your merchandise line-up and looking at the South for a factory site.

Your rival now has a clear picture and his knowledge gives him time and opportunity to make plans of his own, map a program, and perhaps hit the southern market with a new detergent just prior to yours.

The same applications of scientific knowledge and the fitting together of bits and pieces of ordinary information are used in military intelligence. An ordinary photograph of a new type of airplane may mean little to the average American. But to a trained intelligence agent the same photograph can reveal much vital information. The size of a tire gives a clue to the airplane weight load. A man standing near the plane will provide relative measurements that will enable the agent to deduce many facts concerning size. The position of the wheels will provide information as to the plane's balance, while thickness of wings suggests locations for fuel.

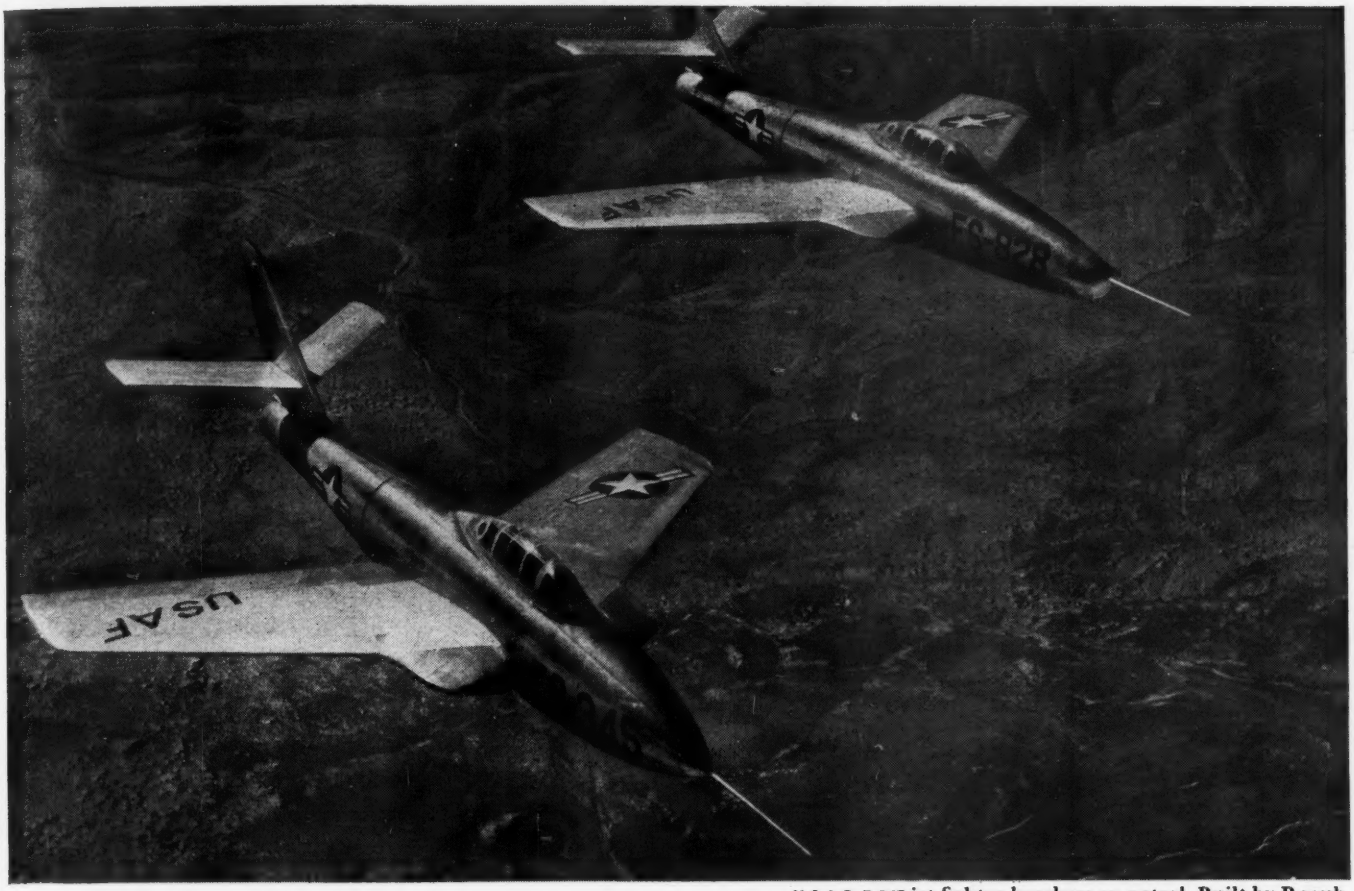
Given these facts about weight, size, balance, and fuel, the well-trained intelligence agent is on his way toward making a reasonable estimate of the intended use of the new airplane.

That is why the Army, Navy, and Air Force are often reluctant to release

photographs of what many people regard as "ordinary information." They know from experience how valuable one unfortunate photograph can be to an unfriendly agent. It may be just the ticket in supplying him with hitherto missing bits and pieces that were needed to complete an entire picture. That is also why some photographs sometimes take what seems a long period to be cleared before publication. Our experts need the time to "police" the photos before they are released. Their caution prevents valuable information leaks.

The major difference between the business and military types of intelligence is that if the businessman makes a mistake, the worst thing that could happen is bankruptcy. But the military man's mistake might easily cost his own life and that of many others as well.

(Continued on page 119)



U.S.A.F. F-84F jet fighter-bombers on patrol. Built by Republic Aviation, they're powered by Curtiss-Wright J-65's.

Two for us!

It's a good thing these needle-nosed Thunderjet fighter-bombers are on our side. They hustle along at better than 650 mph and pack a powerful punch.

Two Barium companies we'd like you to know better—Jacobs Aircraft Engine Co. and East Coast Aeronautics, Inc.—lend a helping hand in building this F-84F jet. East Coast supplies fuel system components, while Jacobs furnishes cylinder strut assemblies.

About your getting to know Jacobs and East Coast better: just as they've joined forces in supplying components for the Thunderjet, so they can provide you with engineering resources and production facilities for designing and making . . .

Precision gear assemblies (ferrous or nonferrous casings) . . . Hydraulic cylinder assemblies . . . Reciprocal engines and components . . . Small gas turbines and components . . . Ram jet and rocket assemblies . . . Helicopter assemblies, blades, transmissions and engines . . . Complete aircraft or assemblies in aluminum, magnesium and Fiberglas laminates.

Why not let these Barium firms show you what they can do for you? Barium Steel Corporation, 25 Broad St., New York 4, N. Y.

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BAYONNE BOLT CORP. • CENTRAL IRON AND STEEL COMPANY • CHESTER BLAST FURNACE, INC. • CLYDE IRON WORKS, INC. • CUYAHOGA SPRING COMPANY • EAST COAST AERONAUTICS, INC. • ERIE BOLT AND NUT COMPANY • GEOMETRIC STAMPING CO. • GLOBE FORGE, INCORPORATED • INDUSTRIAL FORGE & STEEL, INC. • JACOBS AIRCRAFT ENGINE CO. • KERMATH MANUFACTURING CO. • KERMATH LIMITED (CANADA) • PHOENIX BRIDGE CO. • PHOENIX IRON & STEEL CO. WILEY MANUFACTURING CO.

NEW GAS TANK FILLER CAP ASSEMBLIES developed by East Coast are made in this area of plant at Pelham Manor, N. Y. Cap increases fuel capacity, improves wing aerodynamics on all jets.

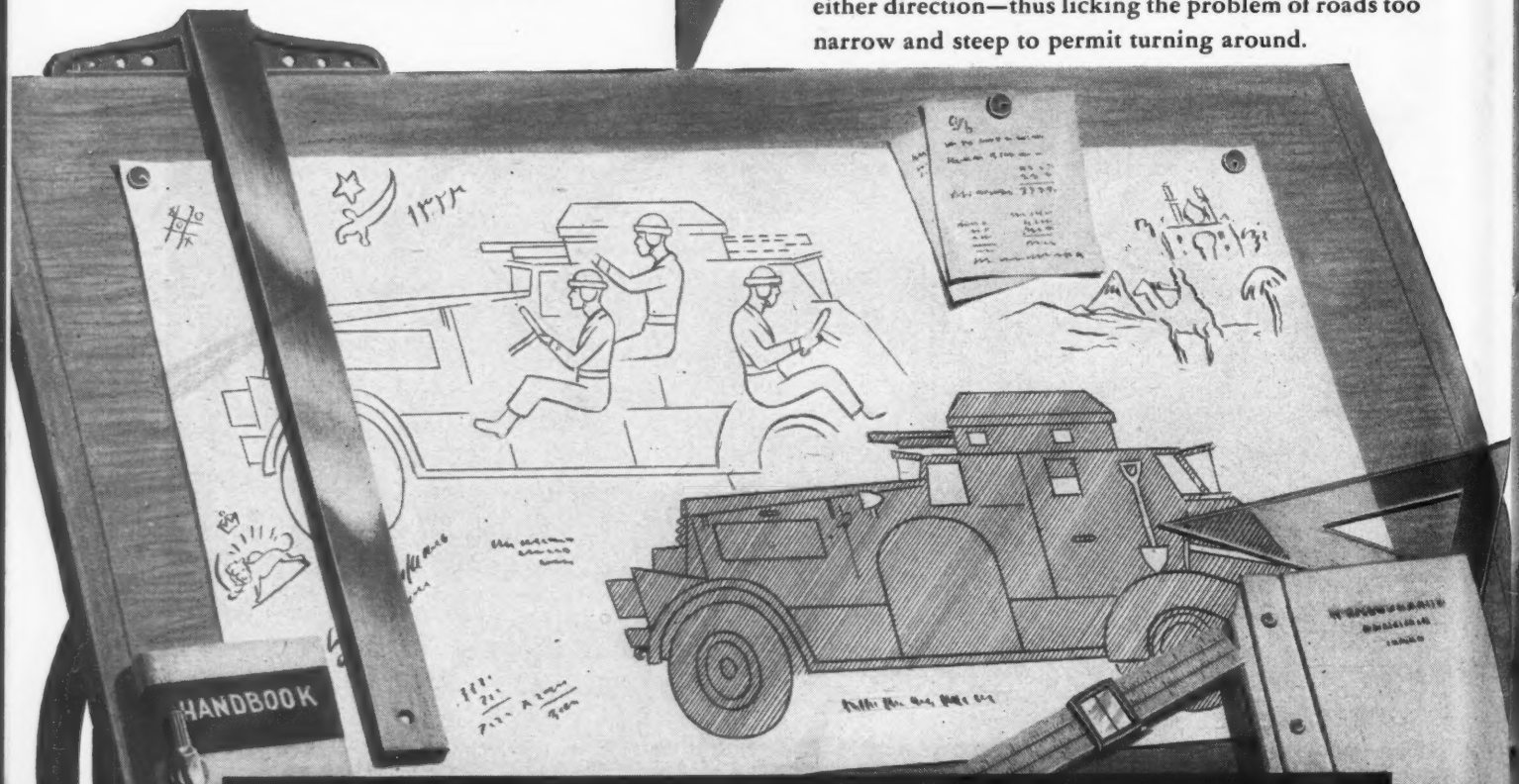
TURRET LATHE DEPARTMENT of Jacobs Aircraft Engine Co., Pottstown, Pa., one of the finest equipped machine shops in the country for the production of precision gear and hydraulic assemblies.

BLUEPRINTING NEW JOBS for new materials at East Coast. Only 7 years old, this heads-up Barium company already rates as one of the top engineering outfits handling aluminum and magnesium.

IMAGINATION IN ACTION!

the "Janus"

Two decades ago, Marmon-Herrington designed and built a large fleet of Janus-faced armored cars for the Iranian army. With two front ends, and no rear, these unique vehicles traveled with equal speed and ease in either direction—thus licking the problem of roads too narrow and steep to permit turning around.



● The "Janus" is but one of hundreds of examples of how Marmon-Herrington's engineering ingenuity has successfully solved some of the most vexing problems of military transport. No matter how difficult your own requirements may seem, if mechanization is involved, the chances are strong that Marmon-Herrington can help you find the right answer. Let's talk it over.

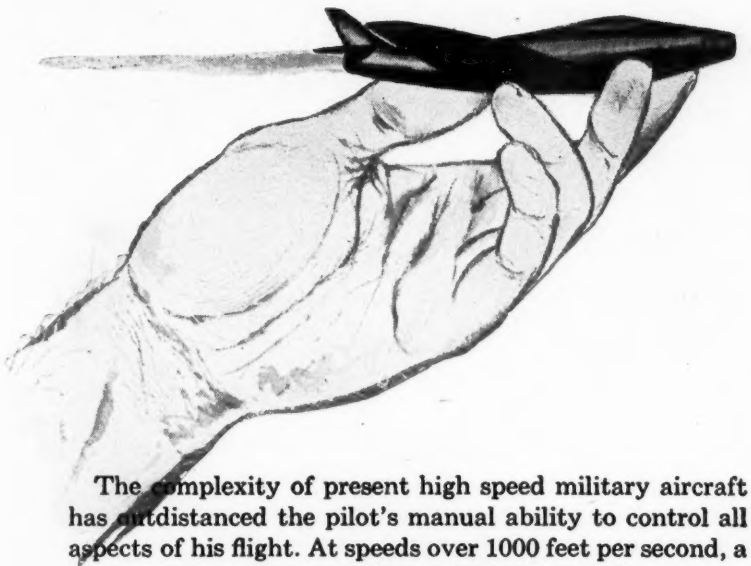
MARMON-HERRINGTON COMPANY, INC. • INDIANAPOLIS 7, INDIANA

MARMON-HERRINGTON

Military Mechanization is our specialty

the pilot's unseen helping hand—

AEROTEC **AUTOMATIC CONTROLS**



The complexity of present high speed military aircraft has outdistanced the pilot's manual ability to control all aspects of his flight. At speeds over 1000 feet per second, a pilot must concentrate on his trajectory. Such functions as fuel transfer, tank-pressure regulation, afterburner eyelid control, cabin pressurization and fuel-filter de-icing must be accomplished automatically. In these functions, AEROTEC Float Switches, Valves and Pressure Switches have contributed greatly to the solution of flight problems at trans-sonic speeds—truly a pilot's unseen helping hand!

AEROTEC Automatic Controls have passed extensive qualification tests *simulating actual flight conditions* in accordance with Spec MIL-E-5272. They are installed on such high speed aircraft as the Boeing B47B and B52, Grumman F9F-6, Northrop F89D and Lockheed F94C.

Constant research by AEROTEC Engineers into problems of hermetic sealing, high-pressure actuation, corrosion and high- and low-temperature conditions has maintained AEROTEC'S reputation as progressive designers and manufacturers of the highest quality products.

Let our qualified engineering staff help solve your automatic control problems. One of our specialists is near, ready to serve you. Call or write today.

When you think of Automatic Aircraft Controls, you should automatically think of AEROTEC.

Project Engineers

THE THERMIX CORPORATION

GREENWICH, CONNECTICUT

(Offices in all principal aircraft centers)

Canadian Affiliates: T. C. CHOWN, LTD. Montreal 25, Quebec • Toronto 5, Ontario

THE AEROTEC CORPORATION

AIRCRAFT DIVISION GREENWICH, CONNECTICUT

Designers and Manufacturers of Automatic Controls—*Valves:* Regulating, Relief and Check types—*Pressure Switches:* Gage, Altitude, Differential and Absolute Types—*Float Switches:* Top, bottom or side mounted—Single, Dual or Tandem.

JET BLASTS——CONTINUED

Wherever competition exists, military or business—the intelligence agent is at work. Watch out for him. You'd be surprised how smart he is. Especially in these days of arms competition when our country is building defenses for freedom and our major rival is seeking ways and means to stop us.

Col. Erwin G. Morrison
Wright-Patterson AFB, Ohio

No Confidence

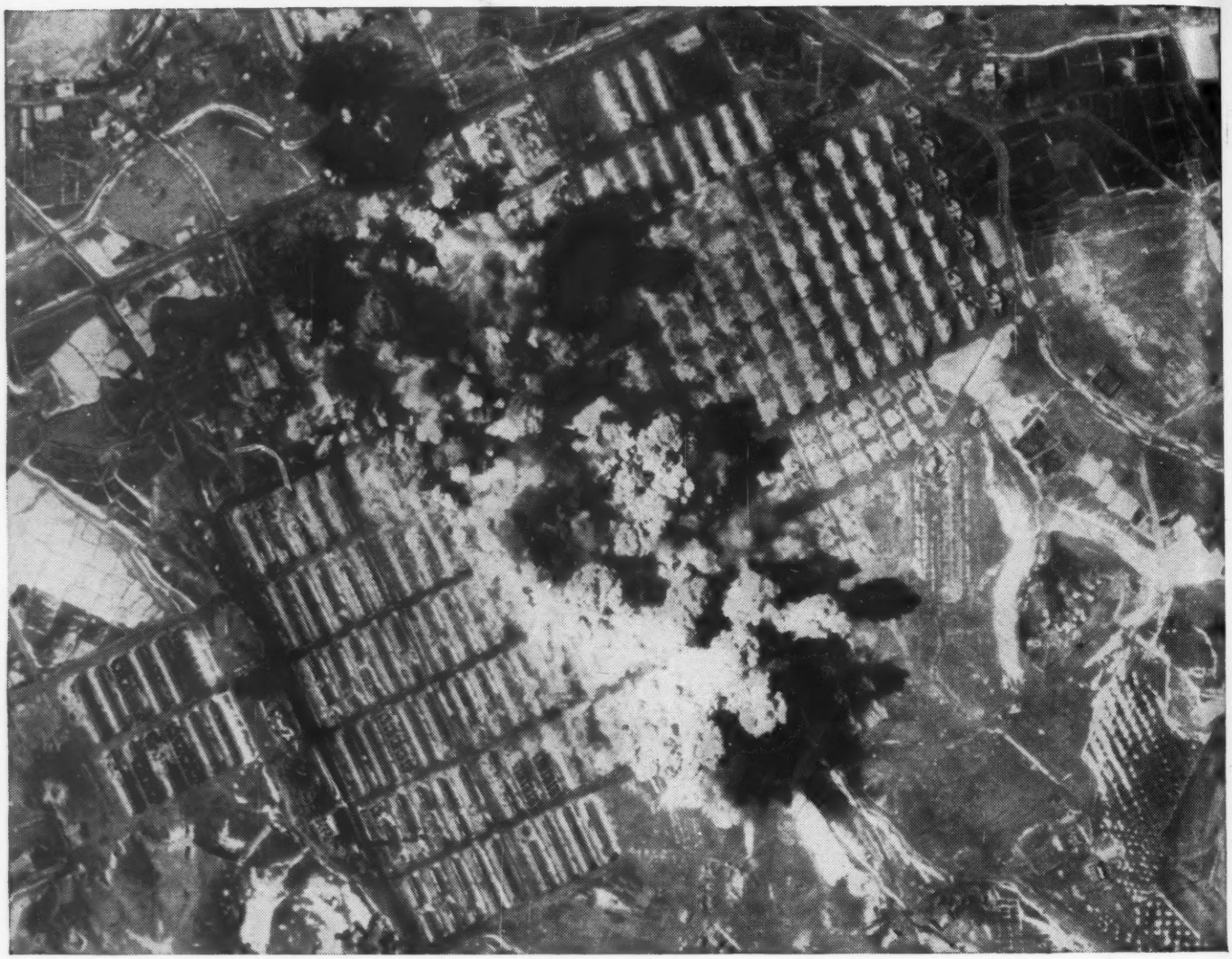
After reading General Vandenberg's report on the recent budget cut in Air Force funds and recalling recent months' editorials on this subject, one comes to a dead end. The best authorities declare we need so much, and it is just as apparent Congress is not going to authorize it. Why?

I believe the public has lost confidence in the ability of Air Force leadership to provide us with adequate air defense and stay within a cost we can afford. The public is thinking of its own pocketbook as is evidenced by the outcome of the last election. Millions of veterans recall service memories of waste, bad leadership, and poor use of personnel. The news of new planes always emphasizes their increased cost. The excessive cost of the air bases in North Africa undoubtedly paved the way for the cancellation of all base construction of which the general complains in his report. My personal correspondence with friends in the service resembles your Jet Blasts before censoring. My own experience strengthens my belief that the service way of thinking has changed little. I was a service pilot in WW II and signed up for Reserve. At the personal interview, I found I was arbitrarily grounded and my attitude changed from a willingness to return to active duty as a pilot to resigning at my earliest opportunity.

Why should I now write my congressman, asking him to approve a higher budget when it is apparent that the same old extravagances are going on? Millions like me must say, "Let them get along on less," and we will continue to say this, short of all-out war, until the leadership proves to us that we are getting a bargain for our defense dollar. We may not be right and we may live to regret it, but we are human and as long as we feel there is waste, such will be our way of thought.

When the Air Force and adherents of airpower correct these impressions by concrete examples of saving, such as the recent contracts for maintenance of aircraft, then I believe the necessary appropriations will be forthcoming. Otherwise, we shall drift along, always short of needs, until war is forced upon us and the supreme effort becomes mandatory. Such is human nature and you cannot escape it.

Wilton B. Hodges
Grand Isle, La.



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ARS' Korean workhorse—an H-5 Sikorsky.

Their business was lifesaving. Because they did it well, many owe their lives to ARS' 3d Group

'WE'RE TOO BUSY FOR MEDALS'

IN MORE than three years of Korean combat, the most highly decorated specialized service of the US Air Force, the 3d Air Rescue Group, has rewritten the air rescue book. This unit of the Air Rescue Service (MATS) has flown more than 16,197 sorties and rescued some 10,000 men of the United Nations' forces.

Rescues and evacuations from battle areas by this group total close to 9,000, plus almost 1,000 UN personnel rescued behind enemy lines, most of these being Air Force fighter pilots and crew members.

These rescues have earned the men of the 3d Group more individual decorations than any other Air Force combat unit which served in Korea.

Besides individual decorations the 3d Group, whose commander during the bulk of the Korean fighting was Col. Klair E. Back, of Whitesburg, Ky., has received two Distinguished Unit Citations from the President of the United States and one Presidential Unit Citation from the government of South Korea.

Capt. Daniel J. Miller, of Stony Point, N. Y., won the 1951 Cheney Award for rescuing six men in a single operation which required three trips in a helicopter into heavily fortified enemy territory.

No one in the 3d has received the Congressional Medal of Honor. But the men who fly the H-5 and H-19 helicopters, and crew members of the SA-16 amphibians, have a good answer for this.

Lt. Col. John J. Dean, of Freeport, Ill., who completed forty-three rescue missions in Korea, puts it this way: "The men didn't think in terms of medals. They were too busy saving lives . . . and risking their own."

To Colonel Dean, the real story behind the spectacular rescues concerns constantly changing air rescue concepts.

Why was this true? Air rescue experts explain it this way. Before Korea, the primary mission of Air Rescue Service was search, with rescue as secondary if the search phase proved successful. Search became academic under Korean war conditions because the downed airman or soldiers trapped on the battlefield had to be alive and within some sort of communications with UN aircraft or friendly forces for their rescue to be started, much less effected.

By Flint O. DuPre

Another major difference was the need for fighter support—to escort helicopters into enemy territory and to neutralize enemy opposition during the rescue attempt.

A third factor was the element of time, for delay of seconds could mean capture or death.

The fourth change in tactics was this—a mission had to return safely to friendly territory before it could be racked up as successful. This was an added factor not encountered in peacetime rescue efforts. In combat there was just as much risk for a helicopter pilot to get out of the rescue area as for him to go in.

To illustrate the changes in tactics, let's go back to the beginning of the war, in fact to the very first day, Sunday, June 25, 1950, when a rescue mission flew from Japan to Kimpo Airfield in Korea in a C-47 to evacuate American personnel.

About two weeks later Sikorsky H-5 helicopters of Detachment I, later to become the 3d Group, were assigned to evacuate wounded ground force men from behind the lines. One helicopter pilot, who had been diverted from his assigned mission because of enemy ground fire, on his own initiative picked up a downed flier. On that day new uses for the helicopter in a combat theater were born, and assignments became increasingly risky.

In Korea the Sikorsky H-5 was used from the outset. The larger Sikorsky H-19 was developed rapidly and began operations in the summer of 1951. The H-5 carries a pilot and an aero-medical specialist, the latter an enlisted man. The H-5 can carry two external litters if it is

(Continued on following page)

to pick up wounded, or the litters can be left off and two stranded air crew members or ground forces men can be carried to safety in seats behind the pilot and his medical technician.

The H-19 carries two pilots and a medical specialist. It can haul eight litters, all inside the machine, or eight to ten men can be picked up depending on their degree of injury, weight, and weather factors.

These helicopters were augmented in the 3d Group by the Grumman Albatross SA-16, which usually carries a crew of six—two pilots, navigator, engineer, radio operator, and radar operator. The load can be a dozen or more men.

The helicopters did most of their flying during daylight in support of fighter and fighter-bomber missions. They supported the F-51s, F-80s, F-84s, and even the F-86 Sabrejets in their sweeps up to MIG Alley. Some of the helicopter missions were completed after dark.

The SA-16s also generally operated in the daytime, but sometimes rescued men at night. The rescue of Capt. Kenneth Stewart, of Louisville, Ky., on a late June evening is a case in point. An F-51 pilot, Stewart hit a flak trap. His engine was hit, and he bailed out at about 700 feet. He landed in the Taedong River and managed to keep afloat.

Meanwhile, other pilots in Stewart's flight fired on the enemy and radioed for help. The call was relayed to a base where Capt. John J. Najarian, of Fresno, Calif., and his SA-16 crew were on alert. Within minutes after receiving the call, and as darkness fell, the Albatross was aloft.

One F-51 of Stewart's flight had remained in the area and furnished radio reports on Stewart's location. Circling above the river, the F-51 turned on its landing lights as a marker for the approaching SA-16. Under enemy fire from both banks, Captain Najarian landed the fourteen-ton Albatross on the river. The darkness was punctuated only by the F-51's lights and fire from enemy guns. Despite the treacherous, dangerous circumstances, the landing, rescue of Captain Stewart, and safe take-off went off as if they did it every night.

Another important development of rescue work in Korea was the growth to full stature of the aero-medical specialists. These airmen constantly operated under enemy fire and many times were directly responsible for saving lives of downed airmen or wounded ground forces people.

Colonel Dean says there wasn't anything they couldn't do. He adds:

"I have seen them give blood plasma, render first aid, splint broken legs, tend minor wounds, administer drugs and other medicines to ease pain and reduce possible infection.

"I have seen them carry injured men on their backs for 300 yards over rugged terrain and under enemy fire. We couldn't always land our helicopters near the men we were rescuing and often had to pick a clearing some distance away. But we could always depend on the medics to get the man back to the 'chopper' for a take-off."

Many of the medics saved the lives of pickups through blood tranfusions. Usually a man who needed plasma got it as soon as the helicopter landed, and the transfusions continued during the flight back to a hospital. Once an injured man reached a mobile hospital, his chance of surviving greatly increased.

One aero-medical technician, A/2C John T. Lowe, of Roxbury, Mass., helped Capt. Dan Miller, mentioned earlier, earn his Cheney Award by picking up six wounded soldiers. On the three consecutive missions through heavy enemy fire, Lowe helped carry the wounded through deep snow to the helicopter which Miller landed on a rocky ridge near the front lines.

Rescue personnel are as proud of their flying equipment as of individual records. The 3d Group received support from other squadrons in Japan, particularly those flying Douglas C-47 and Fairchild C-82 transports, and the RB-29 Flying Fortress, equipped with droppable life boat.

These support planes were highly necessary to the overall mission of the rescue organization in Korea, but the helicopters required the most ingenuity and individual responsibility on the part of the pilots.

This was especially true of the H-5s, for the man who piloted this "whirly bird" was strictly on his own. He didn't carry much fuel. He was often out of range of radio contact with an air base or his own element in the forward areas. Once he was briefed on the mission, he had to make many decisions as he went along. Take a typical mission, which a recent returnee tells this way:

"Our helicopter element is based near, and in support of, a tactical combat fighter group. First word that a pilot is down in enemy territory is received by our rescue control officer in the Tactical Air Control Center. He evaluates the situation, including weather conditions, enemy flak, fighter escort available, and determines if a rescue is possible. He telephones our element, says fighter escort has been arranged, names the rendezvous point.

(Continued on page 125)

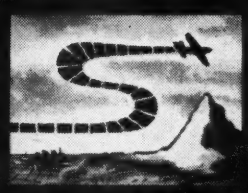
ABOUT THE AUTHOR

Flint O. DuPre, now with the American Red Cross, is a former newspaperman from Dallas, Tex. Included in his ten years of AF service is a long hitch in Japan and Korea. He's a frequent contributor to aviation periodicals.

A welcome sight for a dunked pilot—a Grumman Albatross, SA-16, throws a foamy wake as it touches down.

MOUNTAIN...dead ahead!

New radar "sees" it through darkness



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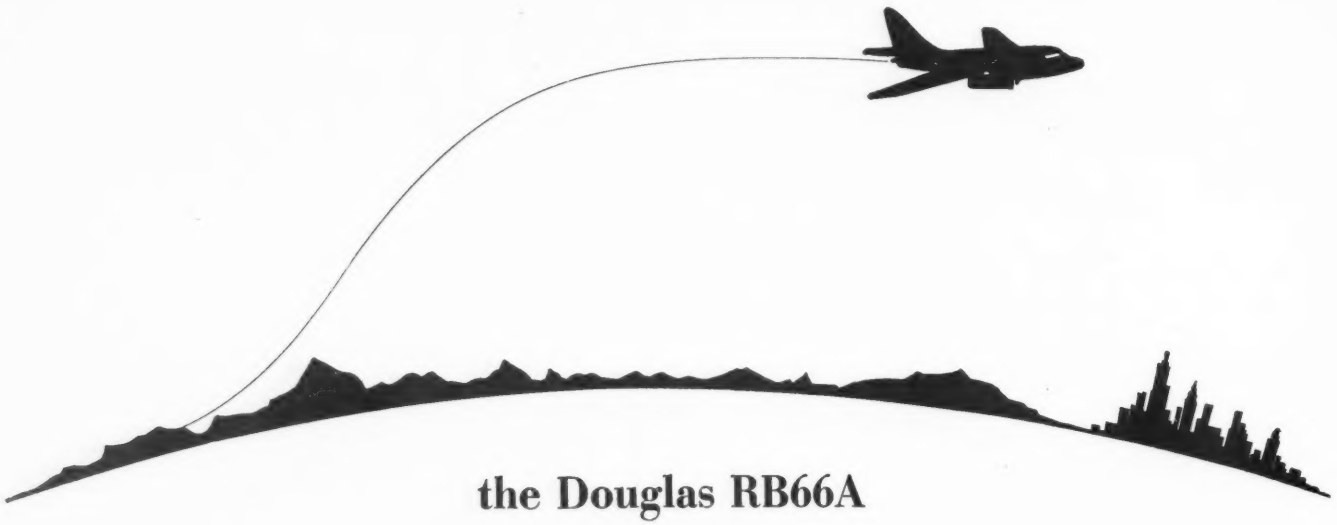

the Douglas RB66A

Built to perform in the stratosphere, or to scrape treetops in low-level missions, the new U.S. Air Force RB66A will be one of the most versatile photo-reconnaissance planes ever designed.

Complete performance data must still remain secret, but the Air Force permits release of the information that the Douglas RB66A will be in the 600 to 700 mph class—with range enough to fly deep into enemy territory, and return. Powered by twin jets, slung in pods below the wing outboard of the fuselage, RB66A will carry the most modern photographic equipment, for accurate reports on operations.

Design of RB66A is another example of Douglas leadership in aviation. Planes that can be produced in quantity to fly *further and faster with a bigger payload* is a basic concept at Douglas.

Depend on *DOUGLAS* First in Aviation

"I get the rescue assignment from my element CO and take off in an H-5, with a medical specialist. I fly as low as possible to avoid enemy ground fire. I meet the fighter escorts at the agreed rendezvous, and we fly to the pickup point.

"If our fighter planes haven't worked over the area enough to neutralize enemy fire, I direct them in to cover the pickup. I land, if possible, or lower a cable for the downed flier to grab. Then back to our base of operations."

A mission like this one occurred when an F-80 Shooting Star pilot was downed in enemy territory.

"We picked him up successfully, but enemy ground fire surprised us, and a second helicopter attempting the rescue was shot down. We saw the pilot and medic scamper into the woods, but it was almost dark so we left and came back at daybreak. We used four F-51s and twelve F-84s to neutralize the enemy. We pulled the two men out by hoist cable."

There were some amazingly fast pickups on land and in icy waters in Korea. Capt. Lloyd E. Williams, of Santa Ana, Calif., rescued three UN pilots from enemy waters in three days. One of his pickups, by helicopter, was accomplished in thirty seconds from the time the pilot hit the water. Williams would hover his helicopter just above the choppy water and lower a rescue line and sling. Fast rescues are important, for exposure in icy waters can cause permanent injury or death in a short time.

Three missions by helicopter pilots in a single day were not unusual. The number of flights depended on how much fighter activity was scheduled, and on weather.

The standard tour was ninety missions, usually made in

(Continued on page 127)

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View of B-47s being processed through a Grand Central Tucson hangar.

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I am qualified in the category checked below and wish further information

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☐ Aeronautical Engineer

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a nine to twelve month period. Helicopter pilots had little trouble getting in this many flights in the required time.

Helicopter pre-combat preparation used to be thirty-five hours, but this figure was doubled at the Air Force's helicopter school at Gary AFB, San Marcos, Tex., where landings and take-offs are practiced under near combat conditions.

Further training was mandatory in Korea before replacement pilots could be assigned to combat missions. They got a complete familiarization course in both flying and ground conditions before being considered combat-ready. Early pilots with the 3d Group did not have this advantage. There was neither time nor equipment.

Helicopter pilots were often rotated to various elements assigned to support fighter groups. Living facilities, food, and other comforts varied with the various elements. Some element bases were more forward and closer to the enemy than were others, thus more dangerous.

When possible, rest and recreation were provided the pilots at various stages of their combat tour. But for most of them the only real R and R came when the tour was completed.

As with all Air Force combat units, maintenance of flying equipment is an essential factor to the success of a rescue operation. All helicopter maintenance except major overhauls, was done in Korea and out-of-doors, as there was no hangar space.

No helicopter pilot requested a second tour of duty in Korea.

As a veteran of the recent rescue warfare explains it, "After you were shot at so many times, you got a little gun-shy."—END

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AFA Silver Medal awards made to top ROTC cadets

IN MILITARY ceremonies on more than 100 college and university campuses this year, the nation's top AF-ROTC cadets were awarded AFA's Silver Medal. This brought to more than 600 the number of cadets who have been presented the medal since the award's inception in 1948.

Winners are named by the PAS&Ts of the 188 institutions now affiliated with the AF-ROTC program. To aid selection, AFA provides rating sheets that may be used. These give equal importance to scholastic standings in both general and military subjects, plus such individual qualities as leadership, initiative, military bearing, and neatness.

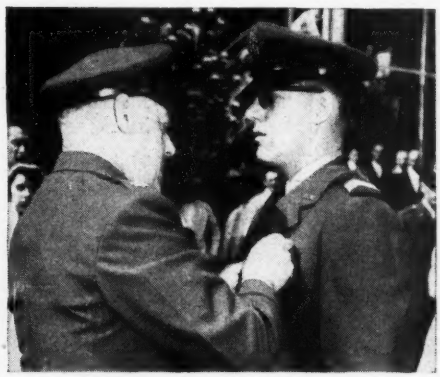
Robert Logan, commander of AFA's Indiana Wing, pins medal on Cadet George Smith at Ball State College.

At Boston University, Cadet George L. Moison gets Silver Medal from AFA Regional VP George H. Hadley.

Brooklyn College's Stanley J. Niebrief is congratulated by Arthur G. Wegman of AFA's Brooklyn Sqdn.

At Butler University, Robert Whyte gets his medal from Thurman J. Fleck, Jr., an Indianapolis AFAer.

Paul E. Rush, commander of Denver Squadron of AFA, pins medal on Allen Eades at Colorado A and M.



Cadet Gilbert R. Hoy of Davis and Elkins is awarded medal by PAS&T Lt. Col. Joseph F. Bangham, Jr.

At University of Hawaii, Howard H. Hamamoto is congratulated by AFA Wing Commander Arthur L. Gordon.

Kent State University's PAS&T, Col. William G. Workman, pins Silver Medal on Cadet Roy D. Northridge.

At Lehigh University, Cadet Mark S. Kaufmann gets his medal from his PAS&T, Lt. Col. Ralph A. Newman.

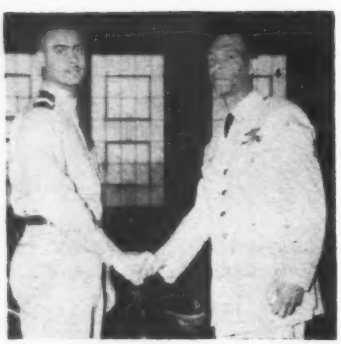
PAS&T Col. Roberts P. Johnson, Jr. of Louisiana State University pins medal on Cadet Alvin W. Marks.

THIS YEAR'S LEADERS

At New Mexico, Cadet David D. Evans gets medal from AFA VP Thomas D. Campbell.

Vernal Boline of AFA Twin Cities Sqdn. with David Markert of College of St. Thomas.

At Stanford, Cadet Gareld F. Krieg gets medal from Col. Erikson Nichols, 4th AF IG.



James Caruth receives medal from Maj. Dudley M. Watson, PAS&T of Tennessee A and I.

At Texas A and M, below, Richard N. Porter receives medal from Col. John A. Way.

DURING the 1952-53 scholastic year a record number of colleges and universities throughout the nation presented Air Force Association's Silver Medal award to outstanding cadets in the AF-ROTC program. The award, established in 1948, has now gone to more than 600 cadets. Here are the names of this year's winning cadets as announced to date by the participating Professors of Air Science and Tactics:

University of Akron, Akron, Ohio. Philip R. Ferdinand

University of Alabama, University, Ala. Water H. Inge, Jr.

Alabama Polytechnic Institute, Auburn, Ala. John S. Langford, Jr.

Ball State Teachers College, Muncie, Ind. George W. Smith

Boston University, Boston, Mass. George L. Moison II

Brooklyn College, Brooklyn, N. Y. Stanley Jerome Neibrief

Butler University, Indianapolis, Ind. Robert F. Whyte

California Institute of Technology, Pasadena, Calif. Dorrence O. Sandfort

Case Institute of Technology, Cleveland, Ohio. Michael Masica

Central Washington College of Education, Ellensburg, Wash. Donald W. Culbertson

Colorado A and M College, Fort Collins, Colo. Allen G. Eades

Colorado State College of Education, Greeley, Colo. William M. Pugh

University of Colorado, Boulder, Colo. Roger Lee Williams

Columbia University, New York, N. Y. William W. T. Won

Davis and Elkins College, Elkins, W. Va. Gilbert Richard Hoy

Drake University, Des Moines, Iowa. Max Rauer

Duke University, Durham, N. C. Douglas W. Schafroth

Franklin and Marshall College, Lancaster, Pa. W. Thomas Sykes

Gettysburg College, Gettysburg, Pa. Alfred R. Marcks

Georgetown University, Washington, D. C. Frank Vincent Monastero

Grinnell College, Grinnell, Iowa. Benjamin W. Jones

Grove City College, Grove City, Pa. Howard D. Macdonald

University of Hawaii, Honolulu, T. H. Howard H. Hamamoto

University of Idaho, Moscow, Idaho. Milburn James Kenworthy

Illinois Institute of Technology, Chicago, Ill. William T. McMorran

Indiana University, Bloomington, Ind. Paul A. Zartman

University of Kansas, Lawrence, Kan. Richard R. McCall

Kent State University, Kent, Ohio. Roy D. Northridge

University of Kentucky, Lexington, Ky. John M. Trimble

Lehigh University, Bethlehem, Pa. Mark S. Kaufmann

University of Louisville, Louisville, Ky. Clinton O. Johnston

Louisiana State University, Baton Rouge, La. Alvin W. Marks

University of Minnesota, Minneapolis, Minn. William A. Reider

University of Mississippi, Jackson, Miss. James B. Campbell

University of New Mexico, Albuquerque, N. Mex. David D. Evans

North Carolina State College of A and Eng., Raleigh, N. C. Julian Everett Lanier

North Texas State College, Denton, Tex. Jay B. Howard

University of Notre Dame, Notre Dame, Ind. Thomas F. Field

Occidental College, Los Angeles, Calif. Donald L. Hook

Ohio State University, Columbus, Ohio. Donald E. Lukens

Oregon State College, Corvallis, Ore. Richard R. Pedranti

Pennsylvania State College, State College, Pa. Richard L. Uppstrom

University of Pittsburgh, Pittsburgh, Pa. Richard W. Keilhofer

College of Puget Sound, Tacoma, Wash. Richard L. Colombini

University of Rochester, Rochester, N. Y. John W. Loock

St. Olaf College, Northfield, Minn. James H. Nessheim

College of St. Thomas, St. Paul, Minn. David Markert

San Jose State College, San Jose, Calif. Edward F. Reiter

University of the South, Sewanee, Tenn. James Alexander Elam III

Stanford University, Stanford, Calif. Gareld F. Krieg

Syracuse University, Syracuse, N. Y. Donald I. Sundstrom

Tennessee A and Ind. State University, Nashville, Tenn. James Caruth

Texas A and M College, College Station, Tex. Richard N. Porter

Texas Technological College, Lubbock, Tex. Brad Wilde

Trinity College, Hartford, Conn. Bernard J. Bogoslofski

Union College, Schenectady, N. Y. Donald H. Zenger

State College of Washington, Pullman, Wash. Ervin J. Berg

University of Washington, Seattle, Wash. Dean W. Berntsen

Western Reserve University, Cleveland, Ohio. Alan A. Garfinkel

University of Wichita, Wichita, Kan. Clark J. Beck, Jr.

Williams College, Williamstown, Mass. Walter N. Creer, Jr.

University of Wisconsin, Madison, Wis. Charles R. Bartholf

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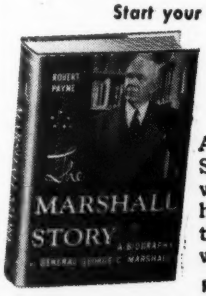

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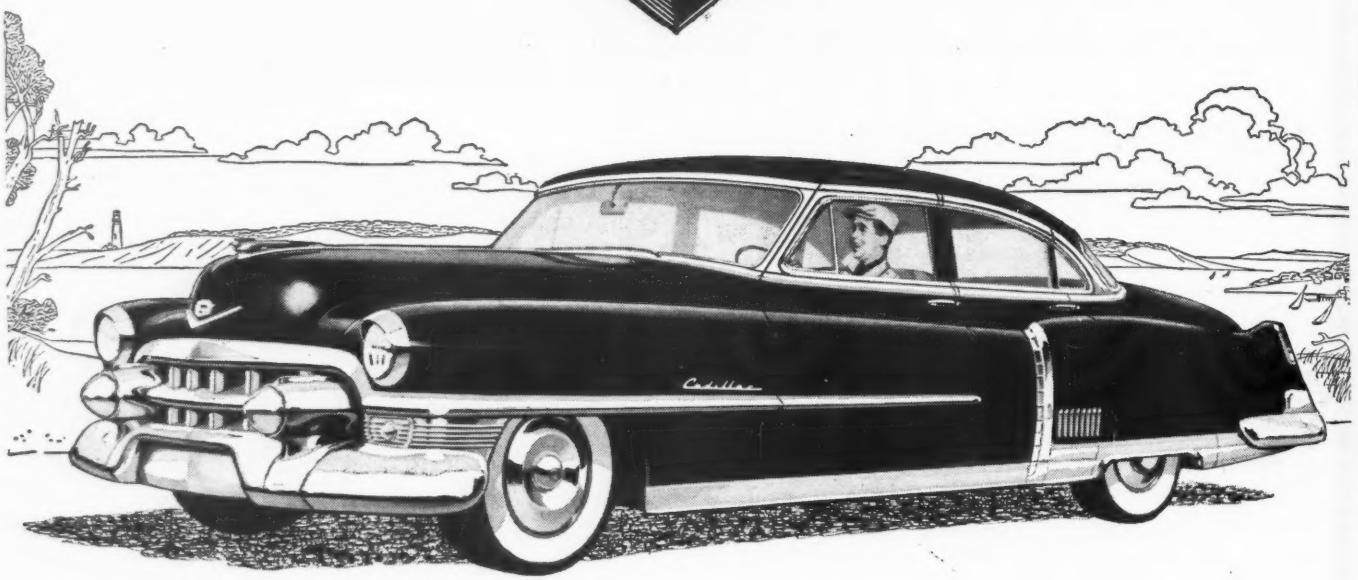

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DAYTON GLIDER MEET SETS RECORD

Toledo man soars 118 miles in Ohio meet sponsored by Dayton's Wilbur and Orville Wright Memorial Squadron

Activities of the Wilbur and Orville Wright Memorial Squadron wound up this year with the unit's participation in the fifth annual Wright Memorial Glider Meet at Dayton. A record thirty-one pilots made 117 contest flights during the five-day gathering. Charles Kohls of Toledo set a new record with his 118-mile flight from Dayton to Toboso, Ohio, winning both the Lane Trophy and the GE Trophy.

The Flying Magazine Trophy, donated by AFA's Gill Robb Wilson, editor and publisher of "Flying," went to the Purdue University team. Robert Stillwagon of Dayton won the Republic Trophy for the best all-around performance by an entrant under 21. Other trophy winners included Julian Allan and Maj. William Elliott, Dayton; Larry Gehrlein, Erie, Pa.; and John Bardwick, from Purdue Univ.

Illinois Wing Trophy

The Illinois Wing Trophy, first prize in the Model Plane Meet sponsored by the Illinois Wing, went this year to Frank Randak. Judges included Wing Commander George W. Wilson, and William Johnson and Leroy Kwiatt, both of Chicago Squadron 41.

Detroit Meets Jet Aces

Detroit's Veterans' Memorial Building was the scene recently of a banquet for seven USAF jet aces back from Korea. Earlier the aces were honored by a parade, and received the keys to the city from Mayor Albert Cobo. The aces included Col. Royal Baker, Lt. Col. Richard Creighton, Maj. Frederick Blesse, Capt. Ralph ("Hoot") Gibson, Capt. Manuel Fernandez, Capt. Joseph McConnell, and Lt. James Low.

At the banquet, staged by the Detroit Squadron, the principal speaker was Col. Roscoe Turner, well known flyer and airpower exponent, who discussed the long fight for proper recognition of airpower's role.

Irving H. Kempner, 13113 LaSalle

(Continued on page 136)

SQUADRON OF THE MONTH

Detroit, Mich., Squadron

CITED FOR

outstanding programming, particularly in the field of public relations, which has resulted in an increased understanding in Detroit and the Detroit area of the mission of the Air Force Association.

Walter R. Savage, Capital Squadron Commander, addresses meeting of the District of Columbia unit. At right, George Hardy, Regional VP.

At Dayton Glider Meet, Frederic Goulston, Squadron Commander, presents Flying Magazine Trophy to William McElwee. At left, Julian Allen, President of Dayton Soaring Society. Thirty-one pilots turned out for the meet.

Charles Kohls, Grand Champion of the Wright Memorial Glider Meet, accepts first-place Lane Trophy from Meet Queens Gloria Lee (left) and Shirley Dalrymple. Kohls, from Toledo, also won the General Electric Trophy.

Seven jet aces take part in civic reception in Detroit. From left are Creighton, Gibson, Low, Blesse, Baker, Fernandez, and McConnell. Fourth from right is Detroit Mayor Albert Cobo, who gave aces keys to the city.

Chicago Squadron 41 and its Auxiliary here are shown with Squadron Banner, first official banner obtained by an AFA Squadron. Cmdr. Ray Gran is to right of flag, and Illinois Wing Cmdr. George Wilson, is second from right.

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At Michigan Wing Convention are, from left, Wing Cmdr. Glenn Sanderson; Stan McWhinney, retiring Cmdr.; Reg. VP Morry Worshill; Gen. George C. Kenney; Bob Emerson, Wing Vice Cmdr.; and Frank Miller, past Sqdn. Cmdr.

Blvd., Detroit, was Program Chairman for the event. He was assisted by Philip Rosenberg, Jerome Green, and others.

Three New Squadrons

At press time, three new AFA Squadrons were being formed. These included units at Fairfield, Calif.; Clearfield, Utah; and Boston, Mass.

The California request for a Charter was being handled by Far West Regional Vice President Michael Kavanaugh, while California Wing Treasurer Charles Morgan was assisting in the organization of the Fairfield unit.

Organizer of the Utah Squadron was Max K. Kennedy, 136 Ross Drive, Clearfield, who was elected Commander at the Squadron's first meeting. This move was, according to William Thayer Tutt, Vice President of the Rocky Mountain Region, an indication that efforts to organize Utah were "finally paying off."

Behind the move to organize in Boston was Miss Mildred H. Buck, 295 Woburn St., North Wilmington, Mass., a "transplanted" member of the New York WAC Squadron. She reported that

(Continued on page 139)

Seated at Michigan Wing Convention are Stanley McWhinney, retiring Michigan Wing Cmdr., with Frances Freundt, President of Wing Auxiliary. Standing, from left, Mrs. Marietta Miller, National Auxiliary President, who presided at installation; Mary Jane Long, Mae Greer, and Frances Karr.

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50th anniversary of the founding of military aviation—

5th anniversary of the establishment of the United States Air Force as an independent service—

7th anniversary of the Air Force Association, the professional society of the USAF—

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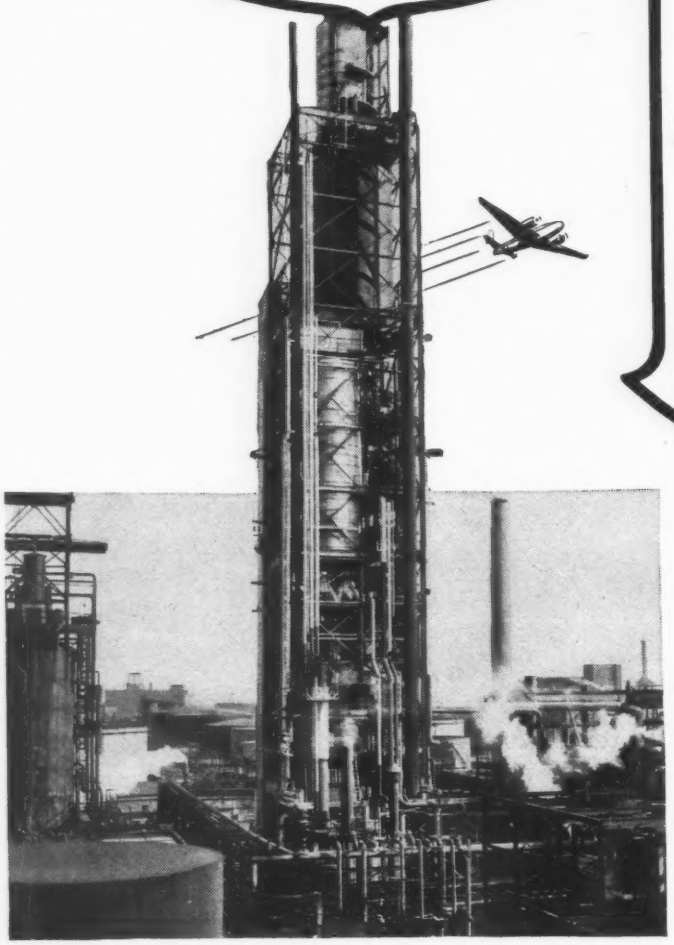

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Los Angeles Sqdn. Cmdr. Richard Button shows Merit Citation to Past Wing Aux. President Elinore Gyopyos, while incumbent Auxiliary President Hazel Riley and Sqdn. Vice Cmdr. Nicholas Gyopyos look on.

a Charter application was being sent to Wing Commander Thomas C. Stebbins, of Worcester.

Auxiliary Birthday

This month marks the anniversary of AFA's Ladies' Auxiliary. At the initial meeting in Detroit last September 1, Mrs. Marietta C. Miller, Hollidaysburg, Pa., was elected President. She is now nominated for a second term.

In the last year the Auxiliary has more than doubled its strength, from ten to twenty-two units, and has chartered four wings—Pennsylvania, Ohio, Michigan, and California. Auxiliary units have worked with their parent AFA Squadrons but have also branched off with such separate programs as the Cuyahoga Founders Squadron Auxiliary's Armed Forces Day observance, and the Pittsburgh group's recruiting program for GOC.

The AFA Widow Rehabilitation program was started recently with the Auxiliary in mind, and an Auxiliary National Committee is now working out details.

Frisco Sets Record

What may be a record was set at the July meeting of the San Francisco Squadron, the seventy-ninth consecutive meeting of that West Coast unit, when all seven past commanders were present. These included Thomas F. Stack, Michael Kavanaugh, Michael Pisani, Howard Halla, Edward Russell, Stewart Reed, and Charles Morgan. The present commander is Robert Dobbins.

San Francisco, one of AFA's oldest and most active units, lost eighty percent of its membership during early recalls in the Korean war. The remaining members worked that much harder to "keep the gang together," and their success can be measured in the programs of the past three years.

One, the "Johnson Memorial Fund,"

(Continued on following page)

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with military experience in
RADAR or
ELECTRONICS . . . . *here's a new kind of career*

At McChord Air Force Base the camera shows Hughes Field Engineer Wilbur Jones (center) helping A/2c Bob Klein (left) and Tech. Sgt. James Horner service a frequency converter unit.

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On joining our organization, you will work in the Laboratories for several months—until thoroughly familiar with the equipment.

WHERE YOU WORK

After your period of training (at full pay), you may (1) remain at the Laboratories in Southern California in an instruction or administrative capacity, (2) become the Hughes representative at a company where our equipment is being installed, or (3) be the Hughes representative at a military base in this country or overseas (single men overseas). Compensation for traveling and moving household effects. Married men keep their families with them.

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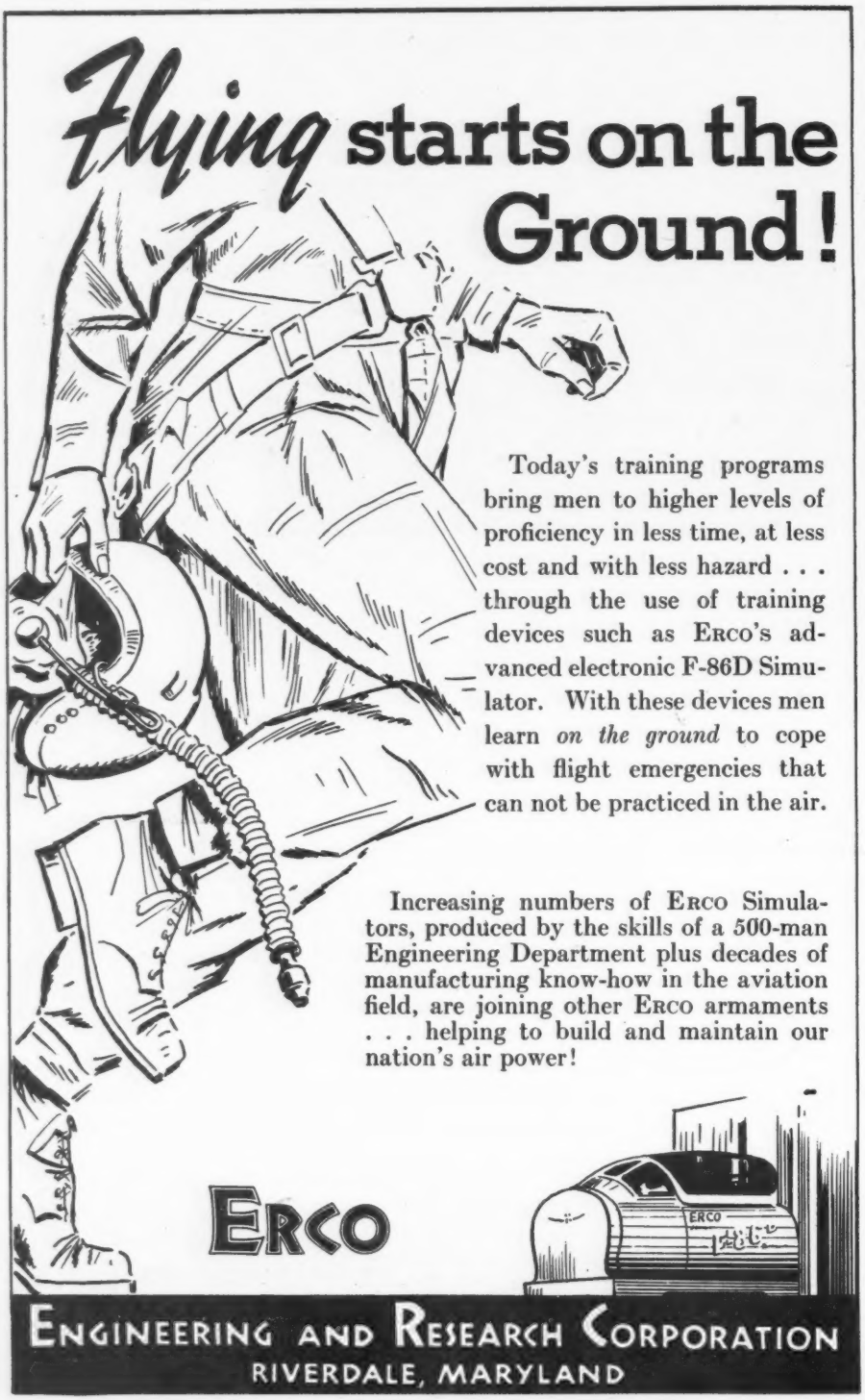
named for a recalled member who died in Korea, provides money for humanitarian programs. San Francisco also originated a program, since widely copied by other AFA units, when it welcomed Col. Francis S. Gabreski back to the US after his tour in Korea. Other jet aces similarly welcomed include Lt. James Low and Col. Royal Baker.

Two of the past commanders, Thomas Stack and Michael Kavanaugh, have spoken before a number of business, professional, and military groups on the relationship of airpower to atomic warfare.

'Air Age' Essay Award

Cadet Capt. Seth Towse of the Albany, N. Y., Military Academy won the Albany AFA Squadron's first prize, a savings bond, for his essay, "The Air Age and What It Means to Me." The award was made at graduation ceremonies. Towse's winning essay was selected from a large number of entries, including many submitted by girls, according to Contest Chairman Earle Ribero. Squadron Commander William J. Quinn, 530 Yates St., Albany, said the Squadron plans to make the contest an annual affair.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LA Hears Test Pilot

Lockheed Chief Test Pilot Tony Le Vier discussed high speed flight with members of the Greater Los Angeles Squadron at a recent monthly meeting. A surprise guest was Capt. Joseph McConnell, Jr., top jet ace of the Korean war, with sixteen MIG kills. McConnell was brought to the meeting in the Ambassador Hotel by Past Wing Commander Jim McDivitt and Col. Robert Baughie, a public information officer of the USAF.

Commander of the Squadron is Richard S. Button, 2943 West Ave., Los Angeles.

Twin Cities Squadron

More than fifty members turned out for a recent meeting of the Twin Cities Squadron as a result of the Minneapolis and St. Paul unit's "revitalization" program, aimed at boosting Squadron membership and sponsoring more interesting programs.

A recent fund-raising campaign bolstered the Squadron's treasury by some $200, according to Squadron Commander Vernal Boline.

Capital Squadron Elects

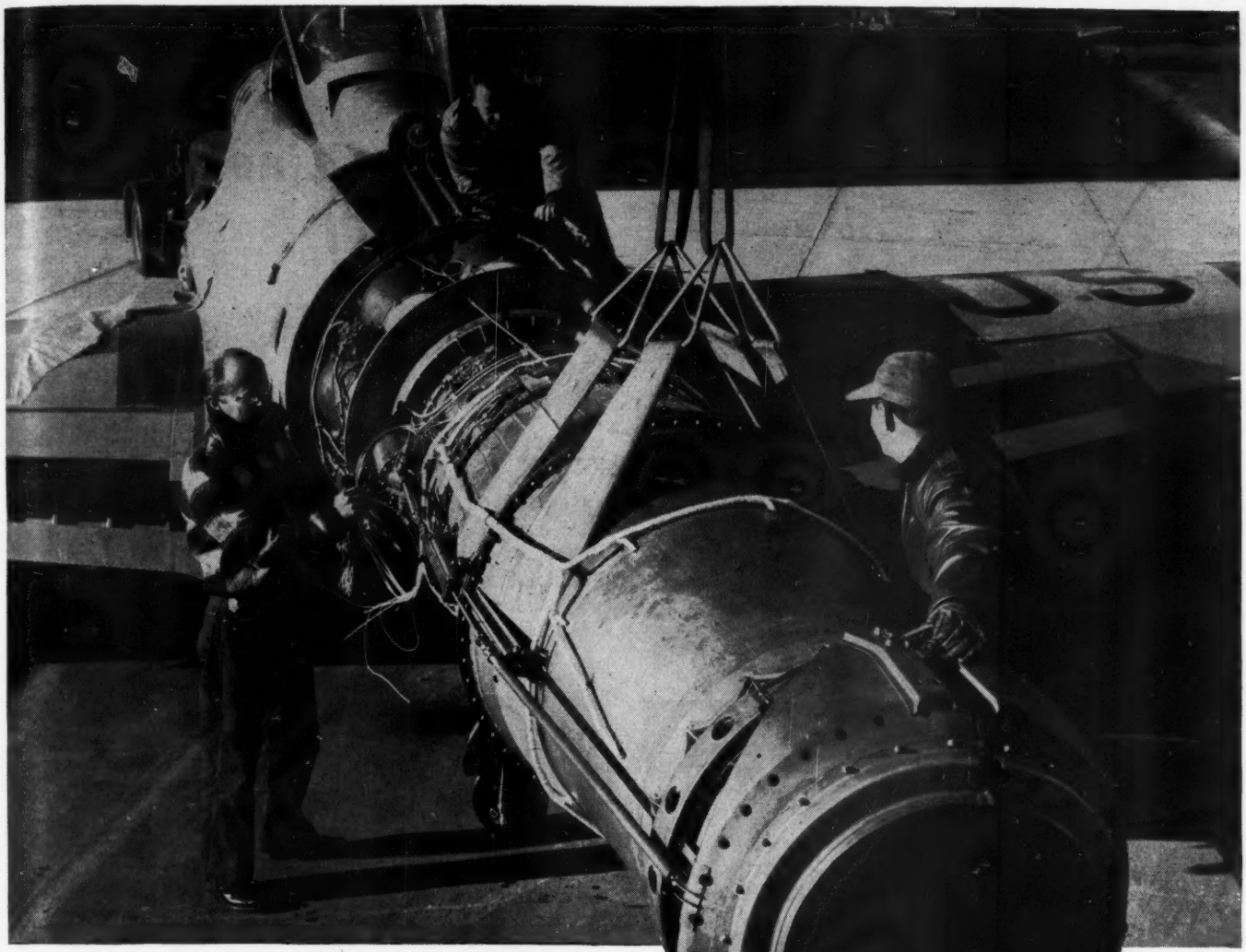
AFA's Capital Squadron of the District of Columbia and this year's host squadron for the National Convention, recently held its election of officers at a regular meeting in the Statler Hotel. Named to head the unit for the coming year was Walter R. Savage, 1314 Massachusetts Ave., NW, Washington. Other officers include Mendes E. Morstein, first vice commander; Peyton S. Hopkins, second vice commander; and Robert L. Burns, treasurer.

At the meeting Squadron members heard AFA President Arthur F. Kelly discuss the significance of airpower. They also saw a film, "Target Nevada," showing the AF's role in recent A-bomb tests at Las Vegas, Nev.

Detroit Honors POW

Detroit Squadron #1 recently sponsored a luncheon for Cpl. Jesse Robertson, the first Korean war POW returned to the Detroit area. Robertson was honored by the cities of Detroit and Mount Clemens, various business and civic leaders, and top military representatives in the area.

Irving H. Kempner, Squadron Commander, was chairman of the arrangements committee.—END



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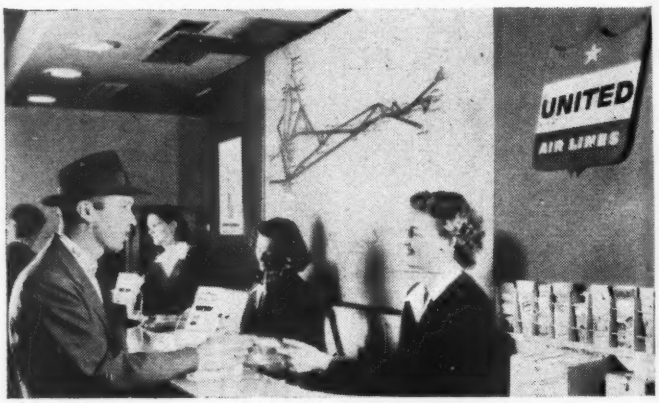

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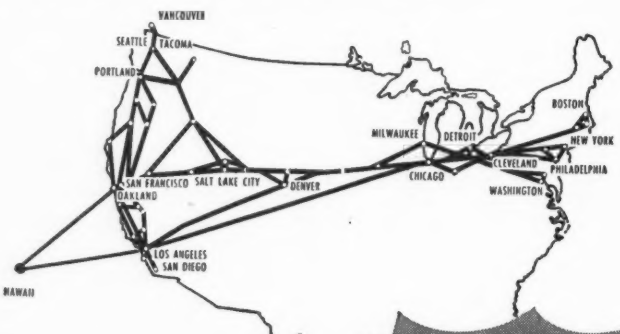

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THESE MOSQUITOES SLAP BACK

The Reds gave the Mosquito its name.

Few men like to fly clay pigeons but not many of the T-6 pilots in Korea would have swapped jobs with anybody

FIGHTERS, interceptors, and bombers got the headlines from Korea, but ask any fighting GI what Air Force plane he remembers best. Ten to one he'll say the T-6 Mosquito.

My assignment in Korea was flying the T-6. Each day I'd haul a ground forces observer up front in my slow, noisy trainer and stalk low behind enemy lines, to find and mark targets for the publicized fighter-bombers.

It's not the world's easiest job. T-6 pilots and observers are the first ones over target and the last to leave. They log more than ninety percent of each combat tour over target areas. As often as not they return from a mission looking like a sieve.

Over no-man's land the Mosquito is a prime target for murderous small arms and automatic weapons ground fire. Sometimes they're attacked (unsuccessfully) by enemy aircraft. But while several Mosquitoes have been shot down by Red ground fire, none has ever been lost to enemy air.

Few men like to fly a clay pigeon. And yet, when I was asked, "You fly Mosquitoes? Boy, I wouldn't have your job for anything in the world!" I always surprised myself by answering, "Boy, I wouldn't trade you either."

For Mosquito represented air *force* to the people to whom it mattered most—the men on the ground. Most Mosquito pilots must have felt the same way, for they never let their audience down.

The Reds gave the Mosquito its name. Early in the Korean war captured Communist soldiers said they were convinced that the T-6s which buzzed their lines had a secret listening device to ferret out their positions. Prisoners complained that behind each inquisitive T-6 came a line of stinging fighter-bombers. So they dubbed the annoying little airplane "The Mosquito."

Technically, the T-6 is an "aerial controller of tactical aircraft used in close support of friendly ground troops." A tactical air control system uses three methods to control aircraft in close support. The first is electronic. Aircraft, usually horizontal bombers, are told when to drop their bombs by a ground controller who keeps track of the aircraft's position in relation to the target by means of a type of radar. In the second, visual observation, a ground controller who has the target under observation uses a portable radio to direct tactical aircraft.

The third method was born of necessity. In Korea, the rugged mountains blocked ground controllers who were trying to direct aircraft visually. The target was always just out of sight. To complicate things, jets began flying close support missions. Some fast and positive method of identifying enemy targets had to be developed. Airborne controllers solved the problem.

When I got to Korea, in January 1952, the Mosquitoes were an Air Force group—two airborne control squadrons equipped with T-6Gs and one ground control squadron with portable radio equipment for forward air controllers. The group had grown to where it could provide both air and ground controllers simultaneously to any point along the UN front.

But back when it all started, pilots flew Mosquito missions in an L-5 and one old T-6. The first airborne controllers were known as "Operations Section of JOC." They helped knock out so many Communist positions that the section was rapidly expanded into what became known as the 6147th Tactical Control Group commanded by Col. Paul Fojtik, Wisconsin ANG.

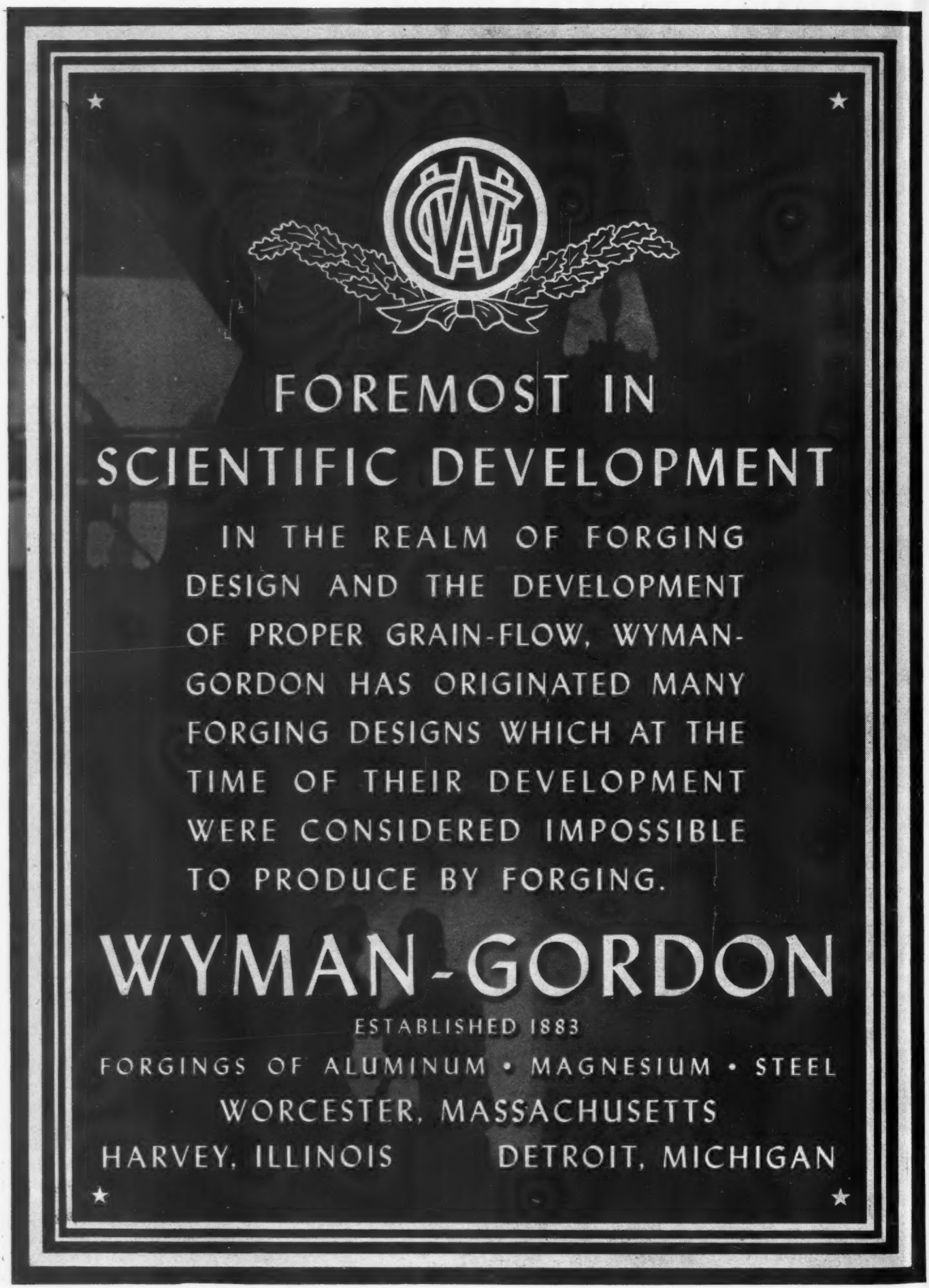
Those first Mosquito missions must have been hell. About all they could do for fighter-bombers was point a wing at the target. I got a taste of what it must have been like one afternoon while leading a pack of F-51 Mustangs onto enemy artillery positions in the mountains west of Anchor Hill. I had just peeled off to fire an identifying smoke rocket into the target when the rudder suddenly locked, and I yelled to my infantry observer, 2d Lt. Leonard Marks, Forest Hills, N. Y., to get his big feet off the rudder pedals. He looked blank and said he didn't have "no feet on no pedals," and there we were—sitting ducks locked helplessly in a skidding turn behind Communist lines. All I could do was to pull the nose up and hold on to what little altitude was left. I stomped the rudder pedals savagely until they snapped free. But then we were locked in a skid to the left! Fortunately, I found the rate of turn could be varied with aileron, so after the mission we "evasively" jerked our way back to friendly lines, a mile and ten long years away.

With the rudders unreliable, I did not dare nose down to fire another smoke rocket for the Mustangs, so we resorted to the primitive system

(Continued on page 145)

By Capt. Jack Jordan

With illustrations by the author


FOREMOST IN
SCIENTIFIC DEVELOPMENT
IN THE REALM OF FORGING DESIGN AND THE DEVELOPMENT OF PROPER GRAIN-FLOW, WYMAN-GORDON HAS ORIGINATED MANY FORGING DESIGNS WHICH AT THE TIME OF THEIR DEVELOPMENT WERE CONSIDERED IMPOSSIBLE TO PRODUCE BY FORGING.
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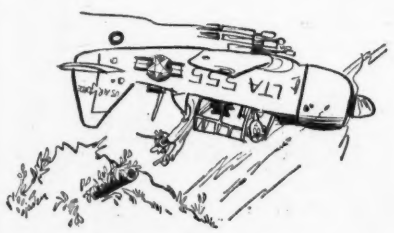
of target marking used by the first Mosquitoes. I pointed a wing. At the same time Marks gave the 51s what seemed to be a deliberate and painfully accurate word picture of the target's exact location.

The fighters hit their target, and we landed safely. But it was easy for me to understand why smoke rockets were replacing wing-pointing to mark targets.

Early ground forces observers are credited with marking the first targets from the air. They stuffed their pockets with flares and smoke grenades to hurl at enemy targets from the open rear cockpit of the drafty T-6. Today, however, Mosquitoes are equipped with up to twelve phosphorous smoke rockets mounted under the wings, fired just as fighter-bombers fire their heavier, high explosive rockets.



It's a log!

The same ingenuity which led to the development of smoke rockets still plays a large part as Mosquito pilots and observers direct fighter traffic over enemy positions.

For instance, one Mosquito pilot solved the problem of increasing darkness under low cloud cover by turning on his landing lights to identify an enemy-held peak for attacking fighters. Another, making a low recce over a proposed target, spotted Chinese climbing out of their foxholes waving white cloths or holding hands over their heads. The T-6 diverted the fighter-bombers circling overhead to another target as the Chinese trotted nervously toward the UN lines.

Still another Mosquito noticed that every time he marked a hill, Red soldiers on nearby hills would leave their foxholes to watch the fireworks. The cagey Mosquito pilot advised circling fighter-bombers to ignore the target he marked with smoke and really attack the hill over which he pulled out of his dive. Scores of unsuspecting Reds fell for the ruse, spilled out of their holes to see the show, and were quickly clobbered.

Flying at tree-top level, the Mosquito sees so many inviting targets that he soon feels frustrated without guns. At one time the T-6s were armed with pods containing .30-caliber machine guns, but the guns were removed when Mosquitoes became too aggressive and began conducting their own personal wars with favorite Communist positions.

Nevertheless, with smoke rockets and low swoops alone, the Mosquitoes rack up an unofficial, but imposing score of spilled enemy bicyclists, dunked bridge walkers, fishing boats, and commie wash lines.

Fighter-bomber pilots in Korea have long been acknowledged as brave "Tigers" while the unarmed Mosquito pilots contented themselves by being "Pussy Cats." On the air the loud (and unauthorized) "MEOW" of a Mosquito going into action tests the sense of humor of those in charge of communication discipline, and also requires an understanding of the temper of the men who fly the little trainers.

For example, it would be hard to describe an average Mosquito pilot. At one time or another in the Korean conflict, pilots flying Mosquito missions have included those with and without combat experience in World War II, some fresh from flying school, and old timers with experience in every type of aircraft, fighters to bombers, including, I am told, the B-36.

The one thing the Mosquito pilots share in common is the initial disappointment on finding they're scheduled to fly the T-6 in combat. Regardless of experience level, none has any illusions about flying low behind enemy lines in an unarmed training plane.

Unofficial but imposing score.

However, once the pilot dives down on the deck to view the face of the enemy "eyeball to eyeball," and learns to defend himself from foxy Communist gunners by even foxier aerial acrobatics, he livens to the challenge to his leadership of getting the fighters on target.

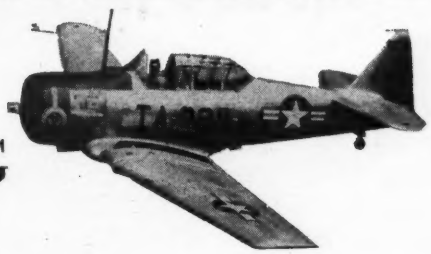
Mosquitoes are not always indifferent to Red ground fire, for careless T-6s are often riddled from propeller to rudder. Occasionally a Mosquito will allow prudence to become the better part of indifference toward risking his neck and the whole front can hear him tell his ground controller, "Target X is too damn hot to recce."

This admission of fear on the air gets a quick derisive response from other Mosquitoes flying the front. The air crackles with sarcastic "meows" and, usually, the hesitant flyer is thus prodded into being a "Tiger" again.

The observer in the back seat of the T-6 is usually a cool, front-line veteran who volunteered for his assignment. Mostly experienced infantry or artillerymen, they know what to look for behind enemy lines and

(Continued on page 147)

T-6—STILL GOING STRONG



ONE OF the best known and most universally used airplanes in air forces throughout the world is still North American's T-6 Texan. Cadets of thirty-three allied nations beside the US got advanced training in these sturdy aircraft in WW II. The AF placed its first order for the then AT-6 in 1939. As a combat plane it scored its first victory in June 1942 when a group got two bomb hits on an Axis sub off the east coast of Mexico. Lately 6s have been used (as RAF Harvards) to bomb Mau Mau terrorists in Africa. Today's T-6G is a 600-hp, low-wing job with 42-foot span and length of about 29 feet. Gross weight is close to 5,500 pounds, and normal cruising speed is 140 mph, with a range of about 750 miles.

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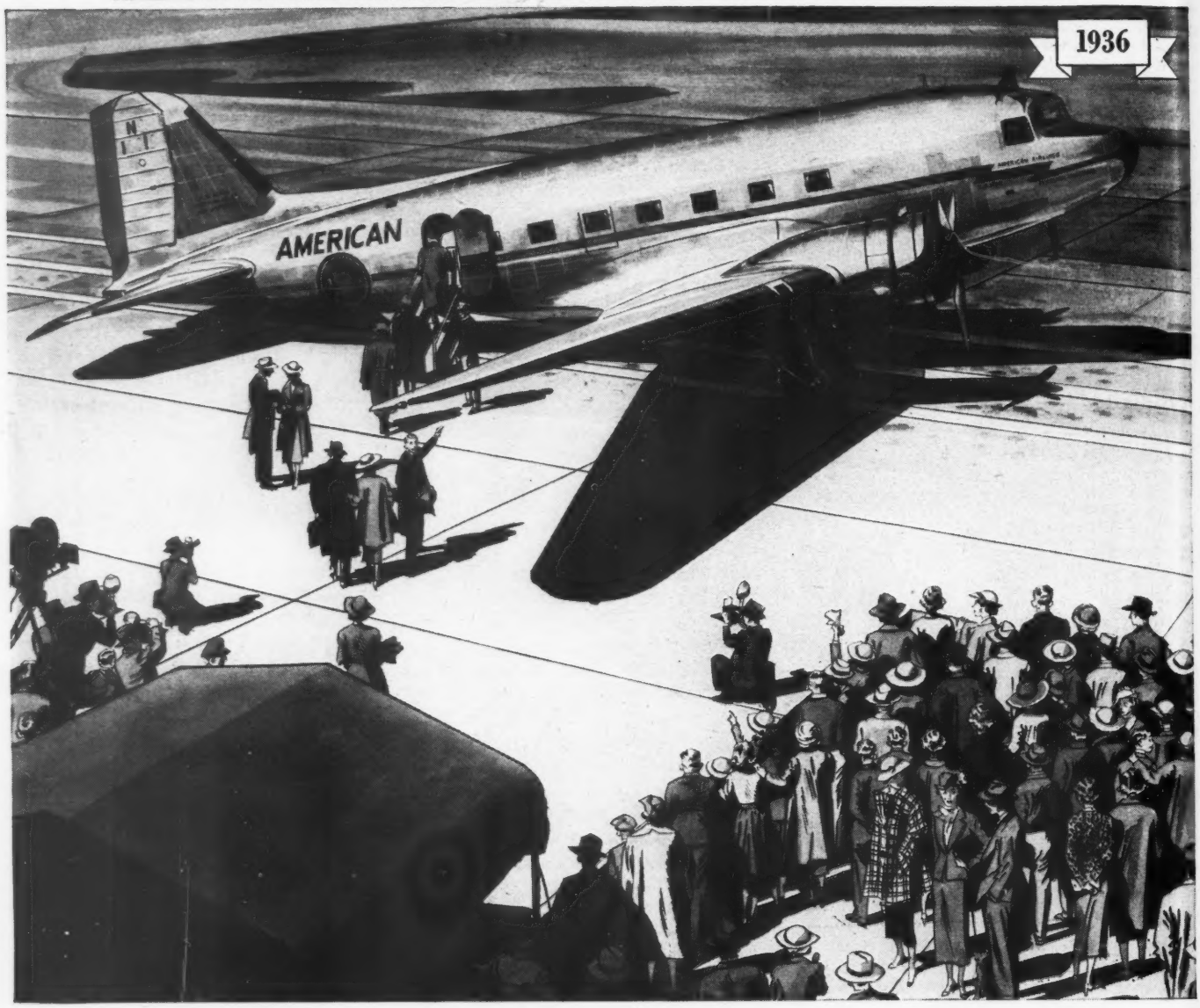

The DC-3-the Plane that put the Airlines "in the Black"

American Airlines celebrated its tenth anniversary in 1936 by introducing a completely new aircraft to the public—the Douglas DC-3. It had been built by a group of Douglas engineers according to specifications drawn under the supervision of William Littlewood, American's chief engineer.

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The development and inauguration of the Douglas DC-3 is only one of many milestones in the history of air transportation that have been introduced by American Airlines.

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what it means to ground troops when fighter-bombers successfully destroy enemy troops, supplies, and artillery.

At various times, the 6147th Group has had officers and enlisted men assigned as observers from the US Army, English, New Zealand, Australian, Canadian, Korean, and other ground force units. These men thoroughly enjoy their tour with the cocky "'ill-'opping" Air Force and derive fierce pleasure from being able to direct destruction on Reds opposing their unit on the ground.

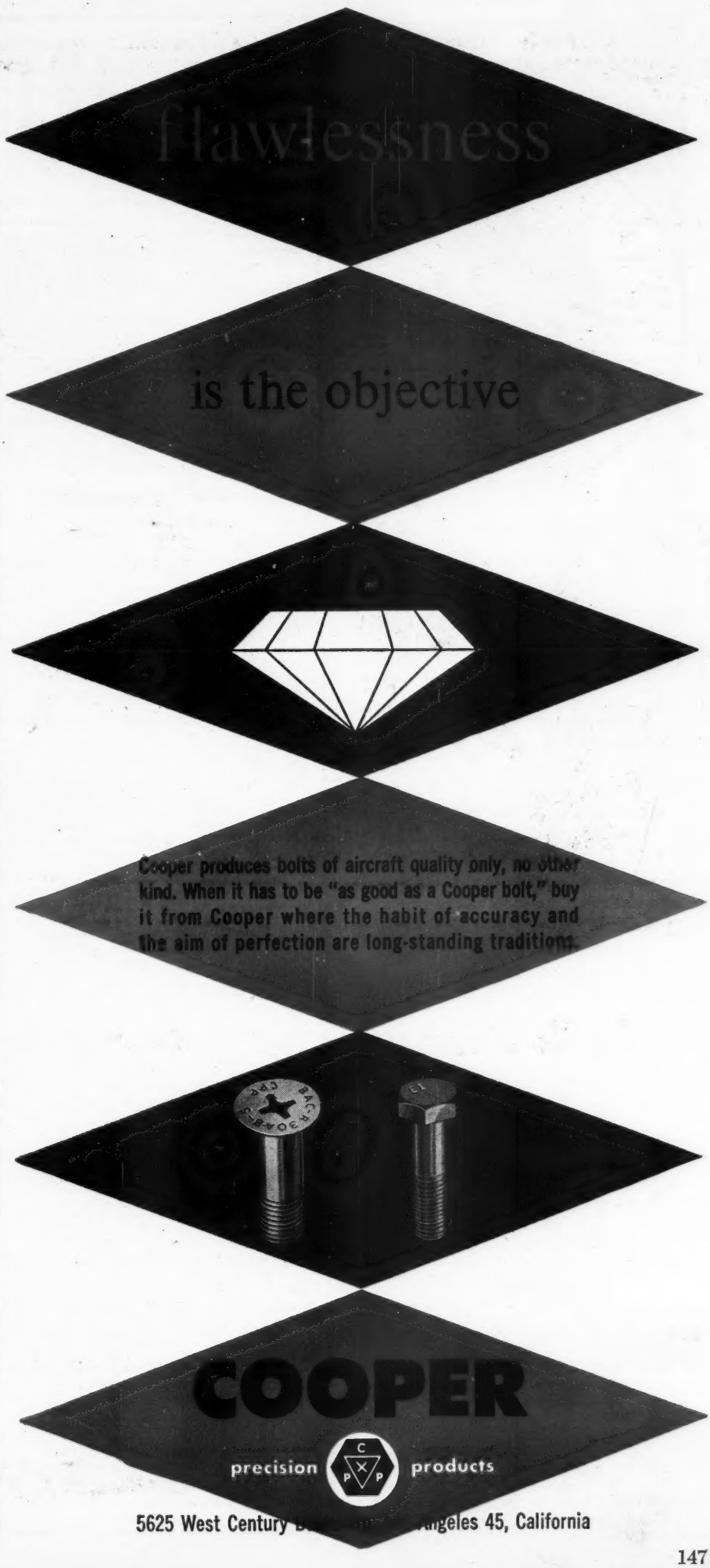
The observer tour of duty which many try to extend, lasts about ninety days, after which the men return to their units as invaluable spokesmen for the effectiveness of tactical airpower.

The effectiveness may be gauged by the boxscore. By the end of 1952, the 6147th Tactical Control Group had flown 32,584 sorties and had logged 97,863 combat hours. More than 25,000 missions were flown at the request of ground force commanders. These sorties represented more than 80,000 combat hours directing and controlling air support strikes over the enemy front lines.

All told, the Mosquitoes say they've been directly instrumental in leading fighters in the destruction of more than eight Communist infantry divisions, totalling more than 100,000 troops; more than four complete tank divisions, two anti-aircraft divisions; and thirty-seven Communist artillery battalions. In addition, they have featured in the destruction of countless buildings, some 5,000 vehicles, twelve locomotives, sixty-two important bridges and hundreds of automatic weapons positions.

Perhaps the highest compliment paid to Mosquitoes is in a study by the Air University on tactical airpower in Korea. In AU's opinion the Mosquito will be a "must" in any tactical air warfare of the future. This comment is well deserved by Mosquito crews, for in all phases of air operation, no one feels as vulnerable as the unprotected T-6 men dodging flak. By the same token, no one feels a greater sense of pride and accomplishment than the Mosquito crews after a mission when they see the helmets and rifles raised in thanks and greeting as they swing back over friendlies.—END

The author, Capt. Jack Jordan, was PIO at Chanute AFB, Ill., before catching his tour of duty as Mosquito pilot in Korea. He's now Reserve PIO at Hensley Field, Dallas, Tex.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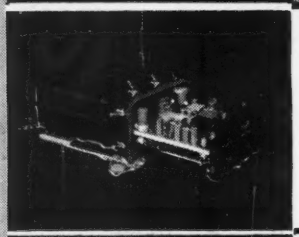
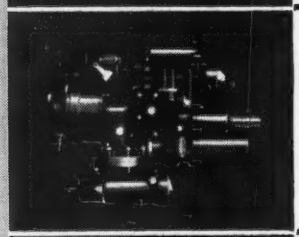
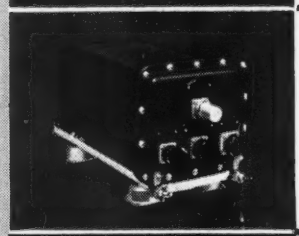


ELECTRONIC CONTROL Senses engine speeds, gas temperatures and other control factors—then signals fuel requirements to the fuel metering unit.



FUEL METERING UNIT Electrically controlled, this unit meters fuel to the engine in accord with signals from the electronic control.



ELECTRONIC AMPLIFIER Maintains a scheduled exhaust turbine temperature by controlling the nozzle area.

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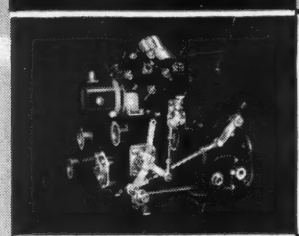
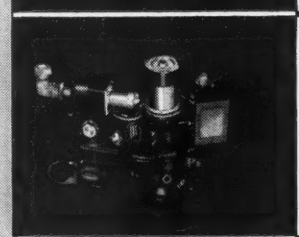
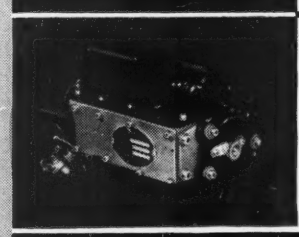


MAIN FUEL CONTROL The control illustrated includes a governor which holds the engine at a selected speed regardless of altitude.



AFTERBURNER FUEL CONTROL Graduates the afterburner thrust by selecting fuel flow in various proportions to mass air flow through the engine.



NOZZLE CONTROL A hydro-mechanical servo control unit which actuates the variable exhaust nozzle mechanism of a jet engine.

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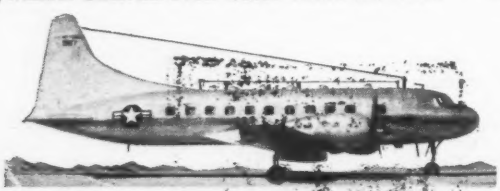

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